



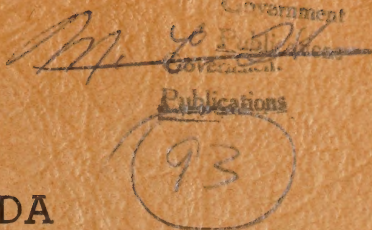
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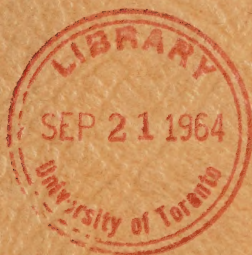
DOMINION OF CANADA

Northern Canada power commission

NORTHWEST TERRITORIES POWER COMMISSION

**ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
MARCH 31, 1949**

OTTAWA, CANADA



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DOMINION OF CANADA

NORTHWEST TERRITORIES
POWER COMMISSION

**ANNUAL REPORT
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MARCH 31, 1949**

OTTAWA, CANADA



Rocky Island in Snare River at Dam Site Prior to Commencement of Construction
June, 1946
—Engineering and Construction Division Photo
Department of Mines and Resources



Snare River Power Development—Aerial View Taken on Official Opening Day,
October 4, 1948

—National Film Board Photo

NORTHWEST TERRITORIES POWER COMMISSION

June 24, 1949.

The Honourable Colin Gibson, M.C., K.C., V.D.,
Minister of Mines and Resources,
Ottawa, Ontario.

Dear Sir,—

I beg to submit herewith the report of the Northwest Territories Power Commission for the fiscal year ending March 31st, 1949, as required under Clause 26 of the Northwest Territories Power Commission Act, Chapter 64, 11-12 George VI, Revised Statutes.

Respectfully submitted,

J. M. Wardle,
Chairman.

The Northwest Territories Power Commission was established under authority of the Northwest Territories Power Commission Act, Chapter 64, 11-12 George VI, which was passed by Parliament in June, 1948. The purpose of the Act is to facilitate the construction and operation of electric power plants in the Northwest Territories for mining and other interests. Power from such plants will be sold at as low a rate as possible subject to the plants being on a self-sustaining basis from the standpoint of overhead, operation and maintenance. With power made available in mineral areas as soon as its need is definitely established, the development of mining properties will be greatly encouraged and the mining and processing of ore made easier and more economical.

The Act became effective on September 1st, 1948, and on that date the appointment of a Chairman of the Commission was authorized by P. C. 3560. September 1st, 1948, was also the date on which the Commission took over the responsibility of the Snare River power and storage project located some 90 miles northwest of Yellowknife, Northwest Territories. This project with an installed capacity of 8,350 horse-power, had been under construction since February, 1946, by the Department of Mines and Resources under the Director of the Surveys and Engineering Branch, and the latter became the first Chairman of the Commission.

The construction of the Snare River power project and its operation by a power commission is a new venture of the Dominion Government and constitutes the first self-sustaining hydro-electric power project to be constructed and operated under Dominion Government auspices. The Act empowers the Commission to obtain money from the Government of Canada through the Department of Finance for power development at interest rates and for amortization periods approved by the Governor-in-Council. Such overhead charges, together with the cost of maintenance and operation of its plants and lines, shall be met by revenue received through the sale of power.

The main responsibility of the Commission to date has been the completion of the Snare River storage and power project and its operation. When the Commission was established on September 1st, 1948, the project was nearing completion and by the end of that month construction was far enough advanced to relieve the contractors of their responsibility and to carry on the various works still unfinished by day labour under the supervision of the Power Commission staff.

On October 4th, 1948, the generating plant and transmission line were officially placed in operation and began to deliver power to the first customer, the Giant Yellowknife Gold Mines Limited. Since that time power has been delivered very satisfactorily and without interruption with the exception of one shut-down of three hours during a very cold spell in December, 1948.

The construction of the Snare River plant involved all the usual operations ancillary to such a project, including transmission lines, quarters for continuing staff, communication systems, and special installations to meet extreme low temperatures in the winter months.

Information on these activities is given in the description of the project which is included in the Appendix to this report.

Owing to the possibility of additional power plants being required on the Snare River as the Yellowknife mining area is developed, the Commission took advantage of the engineering staff on construction to investigate possible power sites below the Big Spruce lake dam. Three sites were selected after survey investigations. In order of suitability and construction priority these are as follows:

D site at Slemon lake 40 miles below the existing dam with a head of 43 feet and a potential development of 5,850 horse-power.

B site, 11 miles below the existing dam with a 60-foot head and a potential development of 8,900 horse-power.

C-1 site, 13 miles below the existing dam with a head of 33 feet and a potential development of 4,500 horse-power.

Water from the Big Spruce lake storage reservoir can be used at all three sites and their construction, if required, would give a well balanced power development on the river with a total installed capacity of 27,600 horse-power. Enough information has been obtained to proceed with preliminary designs of the plants.

In January, 1949, the Commission began making plans for the installation of a suitable diesel generating plant to meet power needs at Fort Smith, Northwest Territories. Three Departments of Government operate separate diesel plants at this point and arrangements have been made whereby the Commission can build a central plant to serve all departmental and local needs. Plans are under way to construct the power-house and

part of the distributing system in the 1949 season and to complete the project in 1950, when it is expected the diesel engines, generators and switchboards will have been delivered and installed.

Preliminary investigation has also been made of the economics of a diesel engine plant at Hay River, although at the end of the fiscal year no decision had been reached.

The Commission staff with the co-operation of the Dominion Water and Power Bureau is giving consideration at present to the development of a hydro-electric plant in the Yukon Territory on the Mayo River to supply power for the silver-lead mines being developed and operating in the Keno Hill District. Plans were made for a survey party to begin work on the ground in the last week of April, 1949. This development would probably have an initial capacity of 2,500 horse-power with an eventual installation of 5,000 horse-power.

When the Northwest Territories Power Commission took over the Snare River plant on September 1st, 1948, it assumed responsibility for the expenditures made to date on that project and on the transmission lines. Additional expenditures chargeable to construction were made subsequently and on March 31st, 1949, the gross investment in the Snare River storage and power project was \$4,615,000.00. Included in this expenditure is construction equipment valued at \$262,000.00. A large part of this equipment was moved overland from Snare River to Yellowknife during the winter of 1948-49.

In order to keep overhead expenses at a minimum over the initial years during which the sale of power may be low, no charge is being made against Commission funds for the services of three permanent Dominion Government officers who handle general administration in addition to their other departmental duties. These include the Chairman, appointed by Order-in-Council; the Secretary, Mr. J. A. Pounder, Department of Mines and Resources, and the Accountant, Mr. A. D. Wymbs, Department of Finance. The salary of Mr. E. W. Humphrys, Electrical Engineer for the Commission, is the only charge at present other than travelling expenses against the Commission at its Ottawa, Ontario, headquarters. Salaries of employees in the Northwest Territories are of course paid from Commission funds.

The financial status of the Commission is shown by the balance sheet of March 31st, 1949, included in this report. In addition to the Appendix there is also a plan showing the general location of the Snare River project.

NORTHWEST TERRITORIES BALANCE SHEET AS

ASSETS

Current

Cash on hand and in Bank	\$93,360.94
Advances Outstanding	640.79
Accounts Receivable	50,000.00
Postage and Unemployment Insurance Stamps on Hand ..	142.28

(1) Inventories:

Materials and Supplies	\$65,606.46
Returnable Containers	7,825.00 73,431.46

\$217,575.47

Claims Pending	238.12
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Fixed

Undistributed Cost of Production Plant, Transmission
Line, Step-down Station, Dams, Spillways, Staff
Quarters and Construction Plant

4,485,295.24

Deferred Charges

Prepaid Insurance

1,663.00

\$4,704,771.83

- (1) Inventories are based on an Inventory as of
30 September, 1948, and with the exception
of Kitchen Supplies, have not been adjusted
as at March 31, 1949.

Certified Correct,

A. D. WYMBS,

Accountant.

POWER COMMISSION
AT MARCH 31, 1949

LIABILITIES	
Current	
Accounts Payable	\$21,969.74
Accrued Salaries and Wages	4,092.85
Unclaimed Wages	28.00
	<hr/>
	\$ 26,090.59
 Long Term Debt	
Government of Canada 3½% loan— secured by Certificate of Indebtedness.	4,615,000.00
 Surplus (Schedule "B")	
	63,681.24
	<hr/>
	<u>\$4,704,771.83</u>

Approved,
J. M. WARDLE,
Chairman.

I have examined the accounts of the Northwest Territories Power Commission for the 6-month period ended March 31, 1949, and have obtained all the information and explanations I have required. In my opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Power Commission's affairs as at March 31, 1949, according to the best of my information and the explanations given to me and as shown by the books of the Commission.

WATSON SELLAR,
Auditor General.

NORTHWEST TERRITORIES POWER COMMISSION

Schedule "B"

SURPLUS ACCOUNT

Net Income for period September 1, 1948. to March 31, 1949 (Schedule "C")	\$63,681.24
Surplus, March 31, 1949	<u>\$63,681.24</u>

Schedule "C"

STATEMENT OF INCOME AND EXPENDITURE FOR THE PERIOD

SEPTEMBER 1, 1948, to MARCH 31, 1949

	Power	Total
Operating Income		
Operating Revenues		
Mines	\$90,258.10	\$90,258.10
Operating Revenue Deductions		
Operating Expenses (Schedule "D")		27,463.98
Net Operating Revenue		\$62,794.12
Add		
Other Income		
Rental of Cottages	401.00	
Rental of Staff House Rooms	486.12	887.12
Net Income for period ending March 31, 1949, transferred to Surplus Account, Schedule "B"		<u>\$63,681.24</u>

Schedule "D"

EXPENDITURES FOR THE PERIOD SEPTEMBER 1, 1948
TO MARCH 31, 1949

Production of Power

Operation:

Salaries and Wages	\$14,201.36	
Employer's Contribution to:		
Superannuation Fund	618.47	
Unemployment Insurance	40.55	
Workmen's Compensation	138.49	
Hospitalization	99.00	
Medical Services	22.00	
Supplies	359.62	
Miscellaneous	48.82	\$15,528.31

Maintenance:

Accessory Electrical Equipment	60.33	
Miscellaneous Power Plant Equipment	45.17	105.50

Transmission Line Expenses

Operation:

Salaries and Wages	1,507.26	
Employer's Contributions to:		
Superannuation Fund	90.44	
Unemployment Insurance	6.16	
Workmen's Compensation	25.40	
Hospitalization	13.50	
Medical Services	3.00	
Supplies	2.07	1,647.83

Maintenance:

Miscellaneous		12.78
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General Plant Expenses

Operation:

Gas, Oil and Lubricants		27.86
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Maintenance:

Structures and Improvements		137.00
Miscellaneous		52.03

Administrative and General Expenses

Salaries — Executives and Officers	2,660.00	
Travelling Expenses	2,697.51	
Advertising	40.10	
Telephone and Telegraph	149.88	
Postage	117.76	
Stationery and Office Supplies	1,480.82	
Special Services	1,400.00	
Employer's Contribution to:		
Superannuation Fund	159.60	
Workmen's Compensation	20.85	
Freight and Express	116.21	
Miscellaneous	256.62	
Net Cost of Rations — Staff Dining Room	853.32	9,952.67

Total Operating Expenses transferred to Income and
Expenditure, Schedule "C"

\$27,463.98

APPENDIX

Snare River Storage and Power Project

In this first report of the Commission it is desirable to place on record a description of the Snare River power project. It originated with the urgent need of electric power by the Giant Yellowknife Gold Mines Limited, Yellowknife, Northwest Territories, this Company advising the Department of Mines and Resources in January, 1946, that it required up to 6,000 horse-power for mining and milling purposes. The Company had already undertaken engineering investigations of a hydro-electric power site at the outlet of Big Spruce lake on the Snare river and subject to Government approval planned to begin preliminary construction immediately. After consideration, the Dominion Government decided to assume the responsibility for the construction of a larger project of some 8,350 horsepower and thus give direct aid and encouragement to all mining development in the Yellowknife area. Aided by the information already obtained by Giant Yellowknife Gold Mines Limited, the project was immediately put in hand by the Department of Mines and Resources and was completed on schedule some two and one-half years later. The responsibility for construction was entrusted to the Surveys and Engineering Branch of the Department, and the Dominion Water and Power Bureau of that Branch handled construction details. The Bureau also supplied stream-flow data and gave technical advice on hydraulic problems.

The development consists essentially of a storage and power dam located some two miles below the original outlet of Snare River from Big Spruce lake, 90 miles by air northwest of the town of Yellowknife. The dam is of earth and rock fill construction with a clay core. Its length is 785 feet and maximum height 83 feet. The dam and power-house were located where an island of rock divided Snare River into two channels. A 16' 6"

by 16' 6" tunnel was driven through this island parallel to the river and used for unwatering the power site. On the completion of the dam this tunnel carried the water to the main turbine in the power-house. The latter is of steel and concrete construction with hanging walls of concrete blocks cast at the site. Its floor dimensions are 75' by 45' with a height of 37 ft. A 4' by 6' tunnel was also driven through the rock island parallel to the main tunnel to carry water to operate a 190 horse-power turbine, driving a 150 KVA generator and a 90 KW exciter. This unit can meet all local needs if the main plant is closed down in any emergency.

The installations in the power-house consist essentially of a turbine with a capacity of 8,350 horse-power driving a 7,000 KW generator. Governors, regulators, switch-gear and switchboard are installed for this capacity. Power is generated at 6,900 volts and the step-up transformer bank consists of 3 - 2,500 KVA transformers and a spare transformer of similar capacity. This bank raises the voltage from 6,900 to 115,000 volts for transmission purposes.

The level of Big Spruce lake was raised by the dam some 45 feet and this, with the natural head in the fall of the Snare River below the outlet of the lake, gives a theoretical maximum head of 62 feet. However, during construction the tail race channel was deepened, resulting in another two feet of head being available and this combined with the ample water supply will permit the development of 9,000 horse-power, and over that amount for short peak loads. The material from the tail race channel was used to form an emergency air-strip below the dam some 2,200 feet long and which can be used by small planes during the winter freeze-up and the spring break-up. By the construction of this air-strip the plant can always be reached by planes if an emergency develops.

The general contract for the main project which included the dam, power-house, tail race, spillway and staff quarters was let to the Northern Construction Mannix Companies of Vancouver and Calgary. This firm pressed the work with vigour and dispatch and finished their contract ahead of schedule and within the estimated cost. The Montreal Engineering Company were consulting engineers for the whole development and undertook the design of the plant as well as the supervision of construction. The turbine was supplied by S. Morgan-Smith Canada, Ltd., of Montreal, and the generator and switchboard by the

Canadian General Electric Company. Transformers were also supplied by the latter firm. The small 190 horse-power turbine was supplied by Charles Barber and Sons of Meaford, Ontario.

Transmission Lines

The 90-mile transmission line between the power-house and the Yellowknife terminal sub-station was constructed under the supervision of Giant Yellowknife Gold Mines Limited, who financed this project on a repayment basis, as a contribution towards accelerating construction of the project generally. The Giant Yellowknife Gold Mines Limited let the contract for the actual erection of the line to the Gowganda Timber Company, Limited. Construction of the line was completed in general accordance with specifications by the end of July, 1948. This transmission line is of wooden H frame construction, with extra poles wherever there is any substantial change of direction of the line. The 45 to 55 foot spruce poles required for the line were obtained from the south side of Great Slave Lake and were distributed along the transmission line route together with conductor wire, telephone wire and pole hardware, during the winter months. Power at 115,000 volts is transmitted from the transformers at the power plant by means of three No. 3/0 A.C.S.R. conductor wires.

Terminal Sub-station

The Yellowknife terminal sub-station is located near the Giant Yellowknife Gold Mines Limited mill some three and one-half miles north of the town of Yellowknife. It consists of 3 - 2,500 KVA transformers which step down the 115,000 transmission voltage to 33,000 volts. An oil circuit-breaker and disconnecting switches are installed at the sub-station while regulation devices, transformers for local service and meters have been placed in a suitable building constructed adjacent to the transformer bank. In order to supply Snare River power to future mines and to the Yellowknife Power Company which serves the settlement of Yellowknife, a connecting transmission line some 3,600 feet long has been built from the Commission's Yellowknife terminal to the Consolidated Mining and Smelting Company's transmission line. This inter-connecting line was completed in 1948 but will not be put in use until all the connecting equipment has been delivered, and the final connection made in June, 1949. The co-operation of the Giant Yellowknife Gold Mines Company and of the Consolidated Mining and Smelting Company in facilitating the plans in this connection is hereby acknowledged.

Staff Quarters

As the Snare River development was constructed in a wholly unsettled area provision had to be made for the accommodation of staff. Construction crews were housed in comfortable, heated, temporary frame buildings, these being torn down when no longer required. For the permanent staff, consisting of power-house operators and maintenance crew, permanent types of buildings were erected. The largest of these is a two-storey staff quarters building providing an up-to-date kitchen, dining room and large living room, with nine bedrooms for single members of the staff, and where all continuing personnel are supplied meals at nominal cost. Two detached residences of modern construction were built for senior married employees. All three buildings are heated by steam from an electric boiler in the power-house, and have running water, electric light and sanitary facilities. The staff is charged a reasonable rental for all quarters supplied.

Communications

The isolated locality of the dam and generating plant made alternative communication facilities between the plant and the Yellowknife terminal sub-station essential. When construction began the Department of National Defence, through its Royal Canadian Corp of Signals, established a radio communication station at Snare River which gave invaluable service. In addition to the above system of communication the Commission installed on the transmission line poles a metallic telephone circuit between the power plant and its Yellowknife terminal sub-station. As a third alternative a single channel carrier telephone system was established. Voice communication over the latter two systems can be made through the terminal sub-station to the Yellowknife telephone system by means of a metallic circuit three miles long constructed by the Commission between the sub-station and the Yellowknife exchange.

The Snare River development has the distinction of being one of the most northerly hydro-electric power plants in Canada operating for twelve months of the year, and its location in the sub-arctic zone gave reason to anticipate some troubles in the generation of power and in the maintenance of the transmission line. The 90-mile line traverses barren and unsettled country, the terrain consisting almost entirely of rocky ridges, muskegs and small lakes.

Low temperatures prevail during the winter months and in the winter of 1948-49 temperatures as low as 62 degrees below

zero occurred. Such conditions required fairly frequent inspections of the transmission line by air, these being supplemented by ground inspections using a snowmobile over the winter road.

To facilitate patrol of the line one-room cabins equipped with emergency supplies and line equipment were placed every 10 miles to provide shelter for linesmen on patrol or repair work. These cabins were located on lakes large enough for planes with pontoons to use in the summer months or to use in the winter months equipped with skis.

While some icing of lines occurred this did not interfere with the transmission of power, and operation over the first winter can be viewed with satisfaction.

Cost Statement

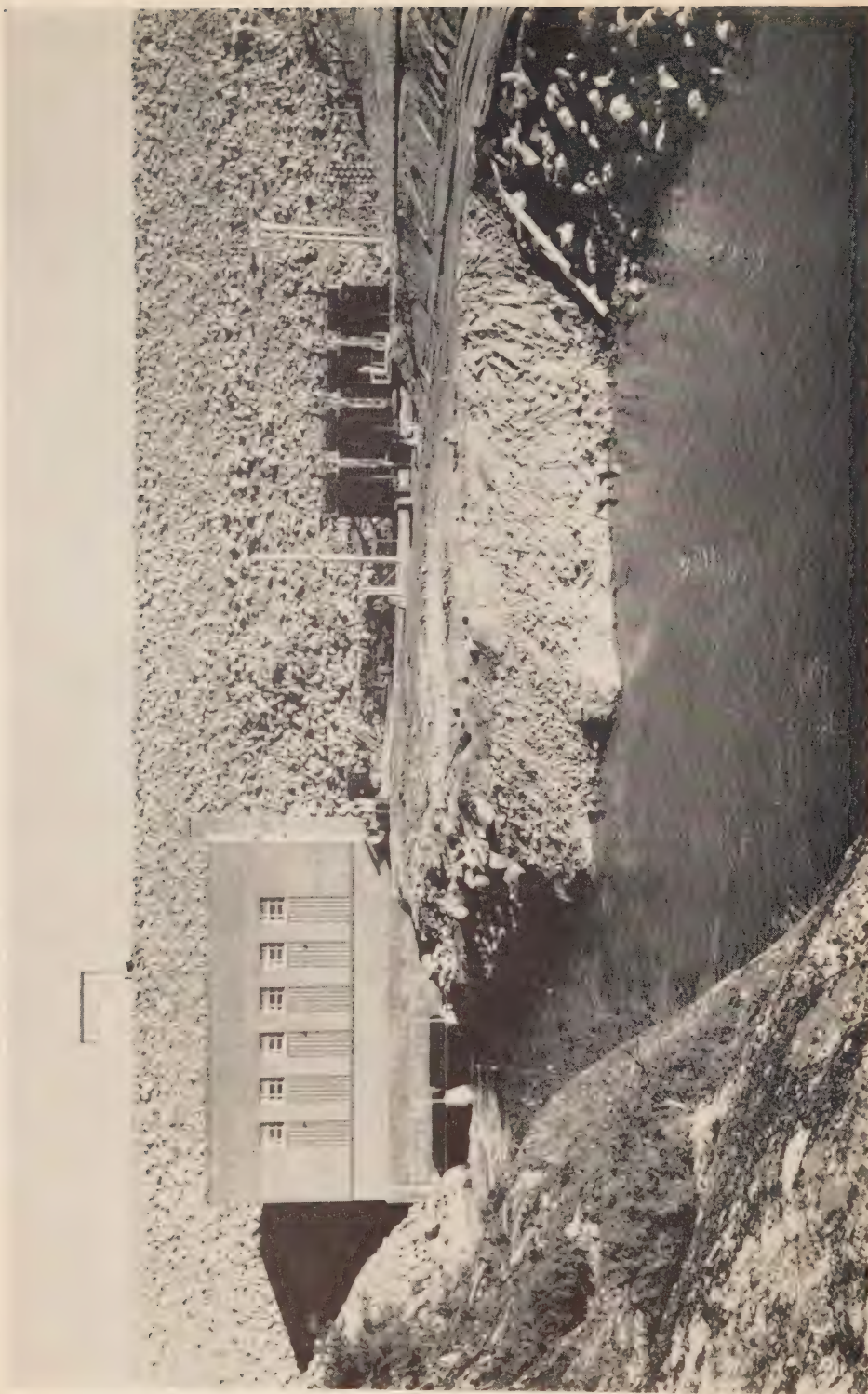
Some figures showing distribution of disbursements might be of interest because of the location of the work and the high cost of transportation. A winter road from Yellowknife over frozen lakes and muskegs, a water route for part of the distance in the summer months, and air transport were the only facilities for bringing in supplies, equipment and personnel. Transportation costs totalled some \$600,000.00 and amounted to approximately 13% of the total cost of the project. These costs are distributed between the items listed hereunder and which give a total cost at March 31st, 1949, of \$4,485,295.24. An approximate break-down of this figure is as follows:

Main Dam and Reservoir	\$ 594,000.00
Power House Building and Heating Equipment	408,000.00
Containing Dams and Spillway	182,100.00
Intake, Conduits, Penstock and Tail Race.....	236,000.00
Power House Equipment	725,360.00
Staff quarters and furnishings, grading of building sites, service roads, water, sewer and heating lines, local power lines, etc.	245,200.00
Construction Equipment	262,000.00
Sub-station — Yellowknife terminal	23,200.00
Transmission Lines	1,380,700.00
Interest on Advances made by Department of Finance prior to amortization period.....	77,715.20
Engineers' Fees and Expenses	146,503.51
General Disbursements not as yet distributed	204,516.53
	<hr/>
	\$4,485,295.24



Looking Upstream Towards the Dam Site Showing the Main Tunnel, Auxiliary Tunnel and the Headgate Structure, July, 1947

—National Film Board Photo



Powerhouse, Dam and Step-up Transformer Station, October, 1948

—National Film Board Photo

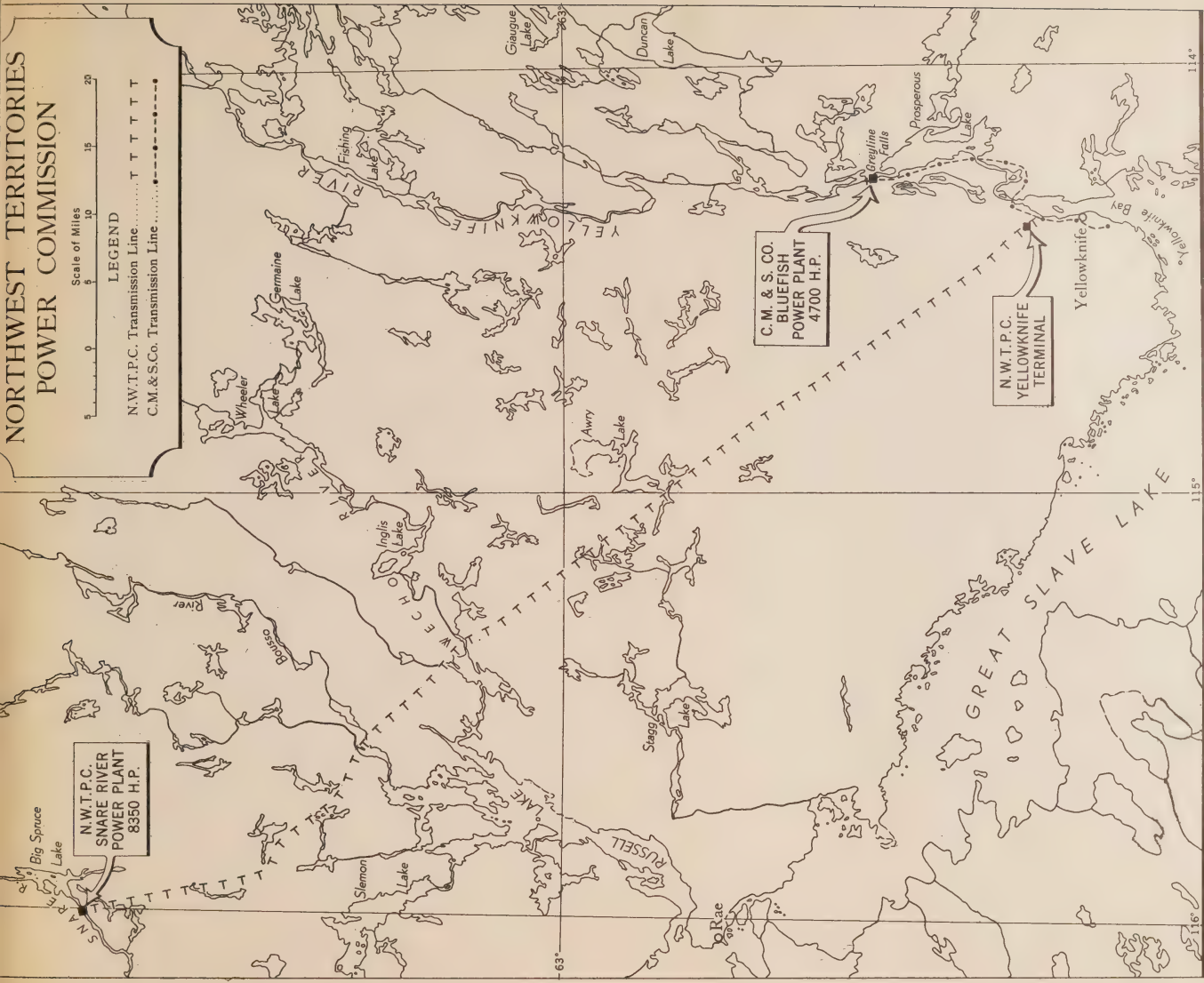
NORTHWEST TERRITORIES POWER COMMISSION

Scale of Miles
0 5 10 15 20

LEGEND

N.W.T.P.C. Transmission Line T T T T T T

C.M. & S.Co. Transmission Line - - - - -



115°

114°

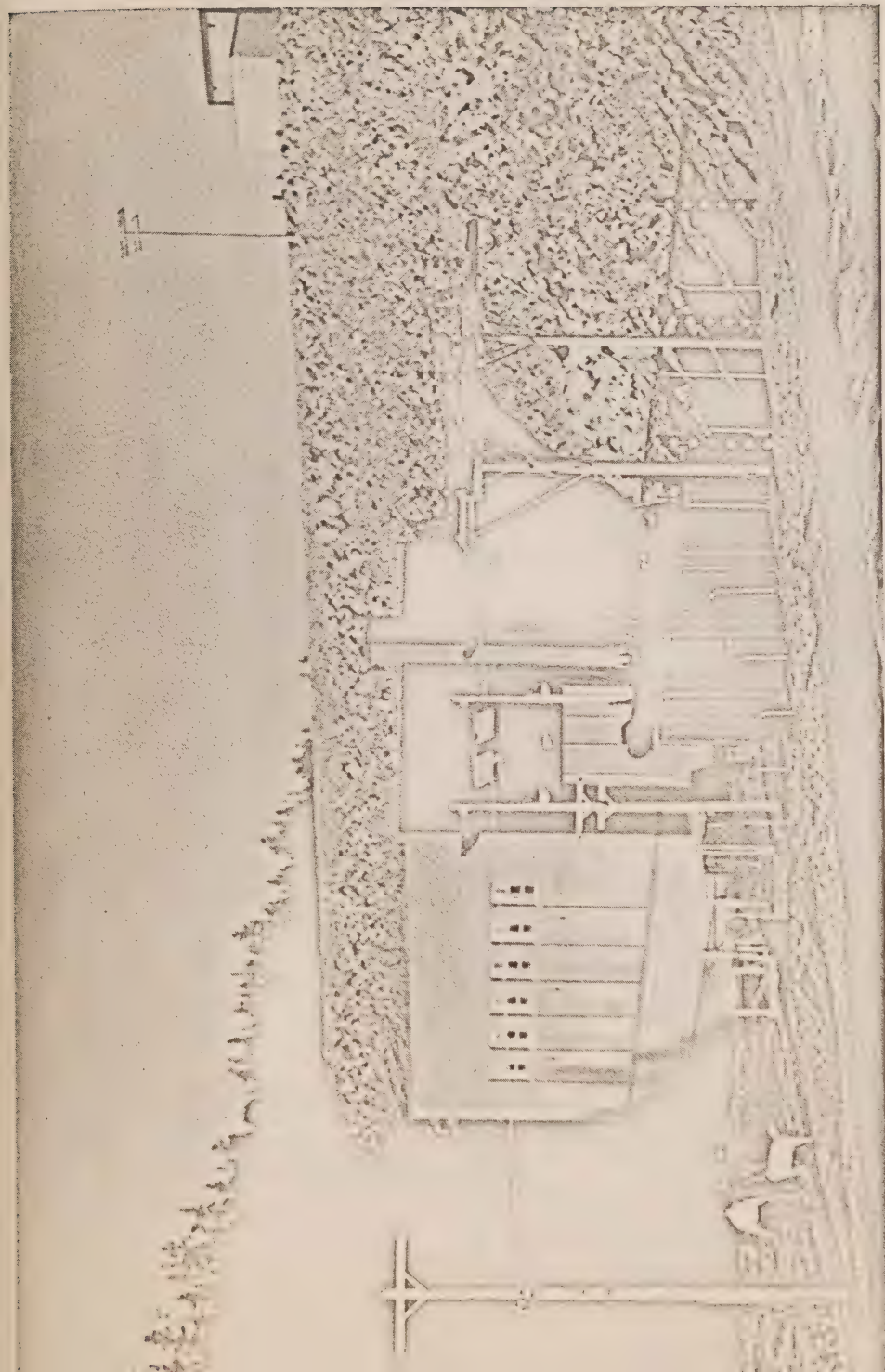
GOVERNMENT OF CANADA



NORTHWEST TERRITORIES POWER COMMISSION

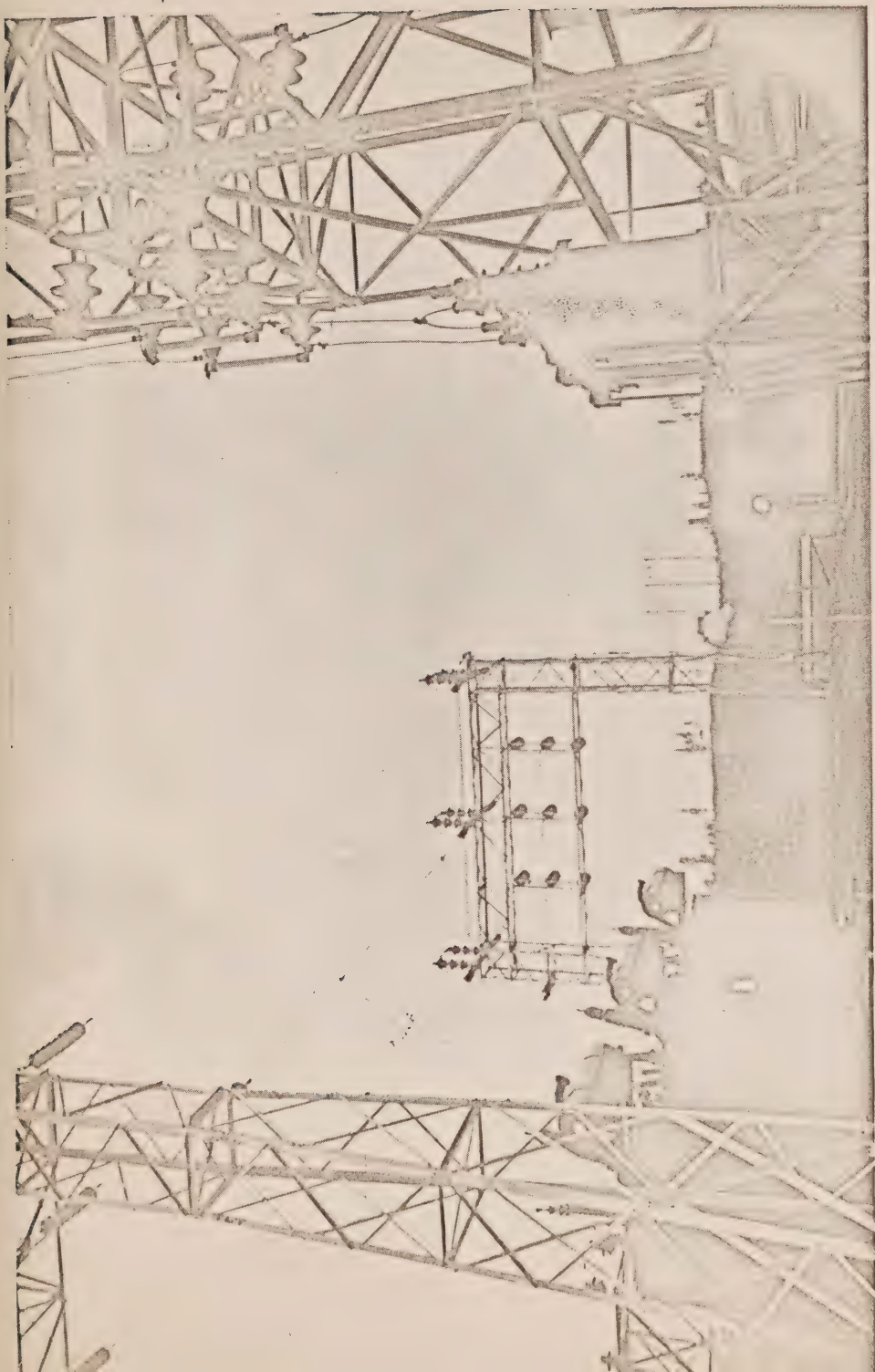
**ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
MARCH 31, 1950**

OTTAWA, CANADA



Powerhouse, dam and transformer equipment, Snare River Power Plant N.W.T.

National Film Board Photo



View of terminal sub-station near Yellowknife, N.W.T.

Northwest Territories, Power Commission, Photo

NORTHWEST TERRITORIES POWER COMMISSION

June 24, 1950.

The Honourable Robert H. Winters, M.P., P.C.,
Minister of Resources and Development,
Ottawa, Ontario.

Dear Sir,—

I beg to submit herewith the report of the Northwest Territories Power Commission for the fiscal year ending March 31st, 1950, as required under Clause 26 of the Northwest Territories Power Commission Act, Chapter 64, 11-12 George VI, Revised Statutes.

Respectfully submitted,

J. M. Wardle,
Chairman.

The Northwest Territories Power Commission was created by Act of Parliament to bring electric power to points in the Northwest Territories where a need developed and where power could be provided on a self-sustaining basis. Costs to be met from revenue include interest on investment, payments on principal, and operating and maintenance expenditures. Careful investigation is made of any proposed installation to ensure that it will be of advantage to the potential consumer from the standpoint of power rates and that the revenue received from the installation will be sufficient to meet overhead and other charges.

The Northwest Territories Power Commission has in operation a hydro-electric power development at Snare River and power has been supplied from this plant since the autumn of 1948. A diesel generating plant is under construction at Fort Smith and plans are underway for the construction of a diesel generating plant at Hay River. During the fiscal year 1949-50, the Northwest Territories Power Commission took the necessary steps toward providing diesel electrical power for the two communities mentioned above as well as making arrangements for power from the Snare River plant to augment the electric power supply in the town of Yellowknife.

Eight regular meetings of the Commission were held. These were attended by the permanent officials of the Department of Resources and Development who handle the administration of the Commission, by the Electrical Engineer of the Commission and by officials of Departments of the Government of Canada who act as required in an advisory capacity.

OPERATION

The operation of the Snare River Power Plant during the year under review can be regarded with great satisfaction. The only major interruption of power occurred in December, 1949, during 40° below zero weather, when a conductor broke on the 90-mile transmission line between Snare River and the Yellowknife terminal station. This resulted in a one-day outage. Examination of the broken conductor revealed that the break was due to defective manufacture and had escaped detection during construction of the line.

In restoring service special difficulties were experienced because of the extreme cold and the very limited hours of winter daylight. The task of climbing frost-sheathed transmission line poles in itself made repair work arduous.

Problems encountered in maintenance of the telephone circuit between Snare and Yellowknife included patrolling of the line on foot. The small size of telephone conductors makes it impossible to locate breaks and other faults from the air as can usually be done in the case of power line conductors. This condition makes necessary ground patrol work in a region of prolonged spells of extreme low temperatures.

A few minor interruptions in power supply, due to lightning strikes on the line, occurred during the twelve-month period of continuous plant operation.

Construction of a short transmission line, connecting the Commission's Yellowknife terminal station to the Consolidated Mining and Smelting Company's Bluefish Lake to Yellowknife transmission line, was completed in July. This arrangement enables the Commission to deliver power to the Yellowknife Power Company for sale within the town of Yellowknife and also to the Consolidated Mining and Smelting Company to supplement the latter's own supply as required. Power line carrier equipment was installed at the Yellowknife terminal station providing communication with the Bluefish Lake plant of the Consolidated Mining and Smelting Company to facilitate parallel operation of the two systems.

Arrangements were completed under which a special rate was granted to the Yellowknife Power Company for off-peak power to be re-sold to residents of Yellowknife for the operation of domestic water heating units. Surplus power is being sold to the Giant Yellowknife Gold Mine and to the Consolidated Mining and Smelting Company for use in electric steam generators.

During part of September and October, the Consolidated Mining and Smelting Company's Bluefish Lake Power Plant was undergoing repairs. For this period, the Commission supplied all the requirements of the customers of this plant which included the Consolidated Mining and Smelting Company's mine, Negus Mines Limited and the town of Yellowknife.

A map showing the Snare River Power Plant and transmission lines is included in this report.

CONSTRUCTION

Snare River Power Plant

All Commission-owned permanent buildings have been maintained in first-class condition with the carrying out of minor repairs. Construction work commenced on a combination office and warehouse building at Snare River which will include workshop space for the repair and maintenance of caterpillar tractors and other mechanical equipment.

Under contract, a bridge was built over Baker Creek near Yellowknife to replace a rock fill crossing and thus improve the access road to the Commission's terminal station.

Fort Smith Power Project

During August and September the powerhouse building for the diesel power plant at Fort Smith was constructed under contract. Orders were placed for three engines of English manufacture as well as for Canadian-made generators and switch gear to be used on this project. This equipment is to be delivered on the opening of navigation on the Slave River, and it is hoped to have the plant in operation by the early autumn of 1950. The installed capacity will be 520 horse-power.

In October a portion of the distribution system was built by the Commission's staff and was placed in service to improve the existing power supply to the Royal Canadian Mounted Police establishment at Fort Smith. The total pole requirement for the distribution lines was obtained in the vicinity of Fort Smith. The required clearing of land to permit the construction of a transmission line to the Department of Transport area at Fort Smith was completed under contract.

Hay River Power Project

The Commission made further investigations into the power requirements of Hay River settlement and decided to undertake construction of a diesel plant and distribution system to serve the community, including the requirements of various Federal Government departments at that point. The installed capacity will probably be 350 horse-power.

TRANSPORTATION

The fuselage and engine of the Commission's Norseman aircraft, which had accumulated an imposing number of flying hours during the construction of the Snare River plant, were overhauled completely at Edmonton and restored to first-class condition. The usual certificate of airworthiness was received. The Commission employs its own licensed pilot.

The Norseman plane is now used to fly in mail, materials and food supplies as well as to make line patrol flights and to convey work crews to points at which repair or maintenance work is required. The distance from Yellowknife, the nearest settlement, to Snare River is some 90 air miles.

The Commission also operates a snowmobile which is used for ground patrols of the transmission line. Occasionally the snowmobile is used to move to Snare River freight which is too large for the Norseman to carry in from Yellowknife.

NORTHWEST TERRITORIES BALANCE SHEET AS

ASSETS

Current

Cash in Bank Accounts			
Fort Smith Funds	\$ 1,705.50		
Snare River Funds	183,558.06	\$185,263.56	
Advances Outstanding		500.00	
Accounts Receivable		76,658.49	
Postage and Unemployment In-			
surance Stamps on Hand		78.36	
Inventories			
Fort Smith Power Plant	1,399.49		
Snare River Power Plant	7,099.28	8,498.77	\$270,999.18
Securities Deposited Under Con-			
sumer's Guarantee			40,000.00
Deferred Charges — Prepaid In-			
surance			3,404.37

Fixed

Fort Smith Power Plant	26,895.01		
Snare River Power Plant	4,614,709.82	4,641,604.83	
		<u>\$4,956,008.38</u>	

Certified Correct,
A. D. WYMBS,
Accountant.

POWER COMMISSION
AT MARCH 31, 1950

LIABILITIES

Current

Accounts Payable	\$ 7,229.19	
Accrued Salaries and Wages	4,978.72	
Unclaimed Wages	28.00	
Long Term Debt—Snare River Power Plant	75,000.00	
Accrued Interest on Long Term Debt—Snare River Power Plant	144,218.75	\$231,454.66
Customer's Deposits—Power Contract Deposits		40,000.00
Deferred Credits—Miscellaneous		110.00
Long Term Debts:		
Fort Smith Power Plant, Government of Can- ada 3½% Loan—secured by Interim Cer- tificate of Indebtedness	30,000.00	
Snare River Power Plant, Government of Can- ada 3½% Loan—secured by Certificate of Indebtedness	4,540,000.00	4,570,000.00
Reserve for Retirement of Long Term Debt— Snare River Power Plant		75,000.00
Surplus—Snare River Power Plant (Schedule "B")...		39,443.72
		<u>\$4,956,008.38</u>

Approved,
J. M. WARDLE,
Chairman.

I have examined the accounts of the Northwest Territories Power Commission for the period ended March 31, 1950, and have obtained all the information and explanations I have required. In my opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Power Commission's affairs as at March 31, 1950, according to the best of my information and the explanations given to me and as shown by the books of the Commission.

J. HOPKINSON,
Assistant Auditor General.

NORTHWEST TERRITORIES

FORT SMITH

BALANCE SHEET AS

ASSETS

Current:

Cash in Bank Account	\$1,705.50	
Inventories	1,399.49	\$3,104.99
		<hr/>

Fixed:

Capital Works Under Construction	26,895.01	
		<hr/>
		\$30,000.00
		<hr/> <hr/>

Certified Correct,
A. D. WYMBS,
Accountant.

POWER COMMISSION
POWER PLANT
AT MARCH 31, 1950

LIABILITIES

Long Term Debt:

Government of Canada 3½% Loan—secured by Interim Certificate of Indebtedness	\$30,000.00
	<u>\$30,000.00</u>

Approved,

J. M. WARDLE, 1
Chairman,

I have examined the accounts of the Fort Smith Power Plant of the Northwest Territories Power Commission for the period ended March 31, 1950, and have obtained all the information and explanations I have required. In my opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Plant's affairs as at March 31, 1950, according to the best of my information and the explanations given to me and as shown by the books of the Commission.

J. HOPKINSON,
Assistant Auditor General.

NORTHWEST TERRITORIES
SNARE RIVER
BALANCE SHEET AS

ASSETS

Current:

Cash in Bank Accounts	\$183,558.06	
Advances Outstanding	500.00	
Accounts Receivable	76,658.49	
Postage and Unemployment Ins. Stamps on Hand..	78.36	
Inventories ..	7,099.28	\$267,894.19
<hr/>		
Securities Deposited Under Consumer's Guarantee		40,000.00
Deferred Charges — Prepaid Insurance		3,404.37

Fixed:

Production Plant	2,475,927.62	
Transmission Plant	1,357,261.60	
Interconnecting Transmission Line	37,492.40	
General Plant	490,053.15	
Construction Plant	253,975.05	4,614,709.82
<hr/>		
		<u>\$4,926,008.38</u>

Certified Correct,
A. D. WYMES,
Accountant.

POWER COMMISSION
POWER PLANT
AT MARCH 31, 1950

LIABILITIES

Current:

Accounts Payable	\$ 7,229.19	
Accrued Salaries and Wages	4,978.72	
Unclaimed Wages	28.00	
Long Term Debt (Payable March 31, 1950)	75,000.00	
Accrued Interest on Long Term Debt	144,218.75	\$231,454.66
<hr/>		
Customer's Deposits — Power Contract Deposits.....		40,000.00
Deferred Credits — Miscellaneous		110.00
Long Term Debt		
Government of Canada 3½% Loan—secured by		
Certificate of Indebtedness		4,540,000.00
Reserve for Retirement of Long Term Debt		75,000.00
Surplus (Schedule "B")		39,443.72
		<hr/>
		\$4,926,008.38
		<hr/>

Approved,

J. M. WARDLE,
Chairman.

I have examined the accounts of the Snare River Power Plant of the Northwest Territories Power Commission for the period ended March 31, 1950, and have obtained all the information and explanations I have required. In my opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Plant's affairs as at March 31, 1950, according to the best of my information and the explanations given to me and as shown by the books of the Commission.

J. HOPKINSON,
Assistant Auditor General.

Schedule "A"

NORTHWEST TERRITORIES POWER COMMISSION SNARE RIVER POWER PLANT

Fixed Assets as at 31 March, 1950

Production Plant

Powerhouse Building	\$ 477,908.09	
Dams, Reservoirs, Intakes, Conduits, Tail Race, Spillways	1,230,084.39	
Turbines, Exciters, Generators	568,445.59	
Switching, Metering and Control Equipment.....	57,862.32	
Powerhouse Furniture and Fixtures	162.00	
Step-up Transformer Bank	78,783.47	
Miscellaneous Equipment	62,681.76	\$2,475,927.62

Transmission Plant

Right of Way	145,111.01	
Sub-Station Building	24,640.33	
Sub-Station Equipment	105,469.07	
Poles and Fixtures	646,640.13	
Conductors and Insulators	408,080.19	
Cabooses and Equipment	10,388.13	
Roads and Trails	13,095.00	
Miscellaneous Equipment	3,837.74	1,357,261.60

Interconnecting Transmission Line

(Yellowknife Terminal Station and Cominco)

Right of Way	881.46	
Sub-Station Building	255.28	
Sub-Station Equipment	13,848.28	
Towers and Fixtures	1,310.43	
Poles and Fixtures	7,910.86	
Conductors and Insulators	3,393.14	
Circuit Breaker (Cominco)	9,887.25	
Miscellaneous Equipment	5.70	37,492.40

Carried Forward 3,870,681.62

Schedule "A"

NORTHWEST TERRITORIES POWER COMMISSION SNARE RIVER POWER PLANT

Fixed Assets as at 31 March, 1950

	Brought Forward		\$3,870,681.62
General Plant			
	Cottages, Staff House	\$299,208.73	
	Office Furniture and Equipment	1,288.08	
	Staff House — Furniture and Equipment	1,264.35	
	Staff House — Kitchen Furniture and Equipment	1,066.12	
	Transportation Equipment	12,392.07	
	Aircraft	40,972.43	
	Garage and Shop Equipment	3,729.89	
	Communication Equipment	124,383.64	
	Tools and Work Equipment	157.82	
	Cottages — Furniture and Equipment	1,295.00	
	Works Building	2,139.73	
	Miscellaneous Equipment	2,155.29	490,053.15
Construction Plant			
	Transportation Equipment	22,377.50	
	Excavating Equipment	102,977.20	
	Tractors, Scrapers, Bulldozers, Mixers, Rollers	99,078.50	
	Tools and Work Equipment	10,439.44	
	Miscellaneous Equipment	19,102.41	253,975.05
			<u>\$4,614,709.82</u>

Schedule "B"

NORTHWEST TERRITORIES POWER COMMISSION
SNARE RIVER POWER PLANT

Surplus Account

Surplus, March 31, 1949	\$63,681.24
Net Income for the period April 1, 1949, to March 31, 1950 (Schedule "C")	50,762.48
	<hr/>
	114,443.72
Less Reserve for Retirement of Long Term Debt	75,000.00
	<hr/>
Surplus, March 31, 1950	\$39,443.72

Schedule "C"

NORTHWEST TERRITORIES POWER COMMISSION
SNARE RIVER POWER PLANT

Statement of Income and Expenditures for the Period April 1,
1949, to March 31, 1950

Operating Income			
Operating Revenues			
Sale of Power—Mines	\$257,091.08		
Sale of Power—Commercial	20,835.60	\$277,926.68	
Operating Revenue Deductions			
Operating Expenses (Schedule "D")		231,262.97	
Net Operating Revenue			46,663.71
Add			
Other Income			
Interest Revenue	753.25		
Rental of Cottages	618.00		
Rental of Staff House Rooms	1,231.66		
Rental of Construction Equipment	1,495.86		4,098.77
Net Income for the period April 1, 1949, to March 31, 1950, transferred to Surplus Account, Schedule "B"			\$ 50,762.48

Schedule "D"

NORTHWEST TERRITORIES POWER COMMISSION

SNARE RIVER POWER PLANT

Expenditures for the Period April 1, 1949
to March 31, 1950

Production of Power:

Operation:

Salaries and Wages	\$39,219.27	
Employer's Contributions to:		
Superannuation Fund	343.23	
Unemployment Insurance	181.77	
Workmen's Compensation	586.87	
Hospitalization	348.82	
Medical Services	77.30	
Supplies	1,008.35	
Miscellaneous	108.22	\$41,873.83

Maintenance:

Structures and Improvements	62.95	
Reservoirs, Dams and Waterways	393.39	
Generators	31.22	
Turbines	59.47	
Accessory Electrical Equipment	2.16	
Miscellaneous Power Plant Equipment	99.37	648.56

Transmission Line Expenses:

Operation:

Salaries and Wages	6,512.29	
Employer's Contributions to:		
Superannuation Fund	195.25	
Unemployment Insurance	25.14	
Workmen's Compensation	104.31	
Hospitalization	56.91	
Medical Services	12.65	
Supplies	133.21	
Miscellaneous	31.10	7,070.86

Carried Forward \$49,593.25

NORTHWEST TERRITORIES POWER COMMISSION

SNARE RIVER POWER PLANT

Expenditures for the Period April 1, 1949
to March 31, 1950

Brought Forward		\$49,593.25	
Transmission Line Expenses (Continued)			
Maintenance:			
Sub-Stations	\$	82.63	
Poles and Fixtures		170.07	
Conduits		6.28	
Miscellaneous		297.36	556.34
			<hr/>
General Plant Expenses:			
Operation:			
Operation of Trucks, Tractors, Snowmobile, Boat, etc.		351.85	
Charter of Aircraft		3,808.05	
Aircraft—Norseman CF-PAB		1,777.16	5,937.06
			<hr/>
Maintenance:			
Staff House Furniture and Fixtures		88.46	
Transportation Equipment		790.52	
Construction Equipment		1,820.20	
Aircraft—Norseman CF-PAB		5,568.35	
Insurance		600.00	
Communications Systems		24.49	
Miscellaneous Equipment and Property		203.45	9,095.47
			<hr/>
Interconnecting Transmission Line (Yellowknife Terminal Station and Cominco)			
Maintenance:			
Sub-Stations		71.19	
Transformers and Meters		6.35	
Miscellaneous		3.60	81.14
			<hr/>
Carried Forward			\$65,263.26

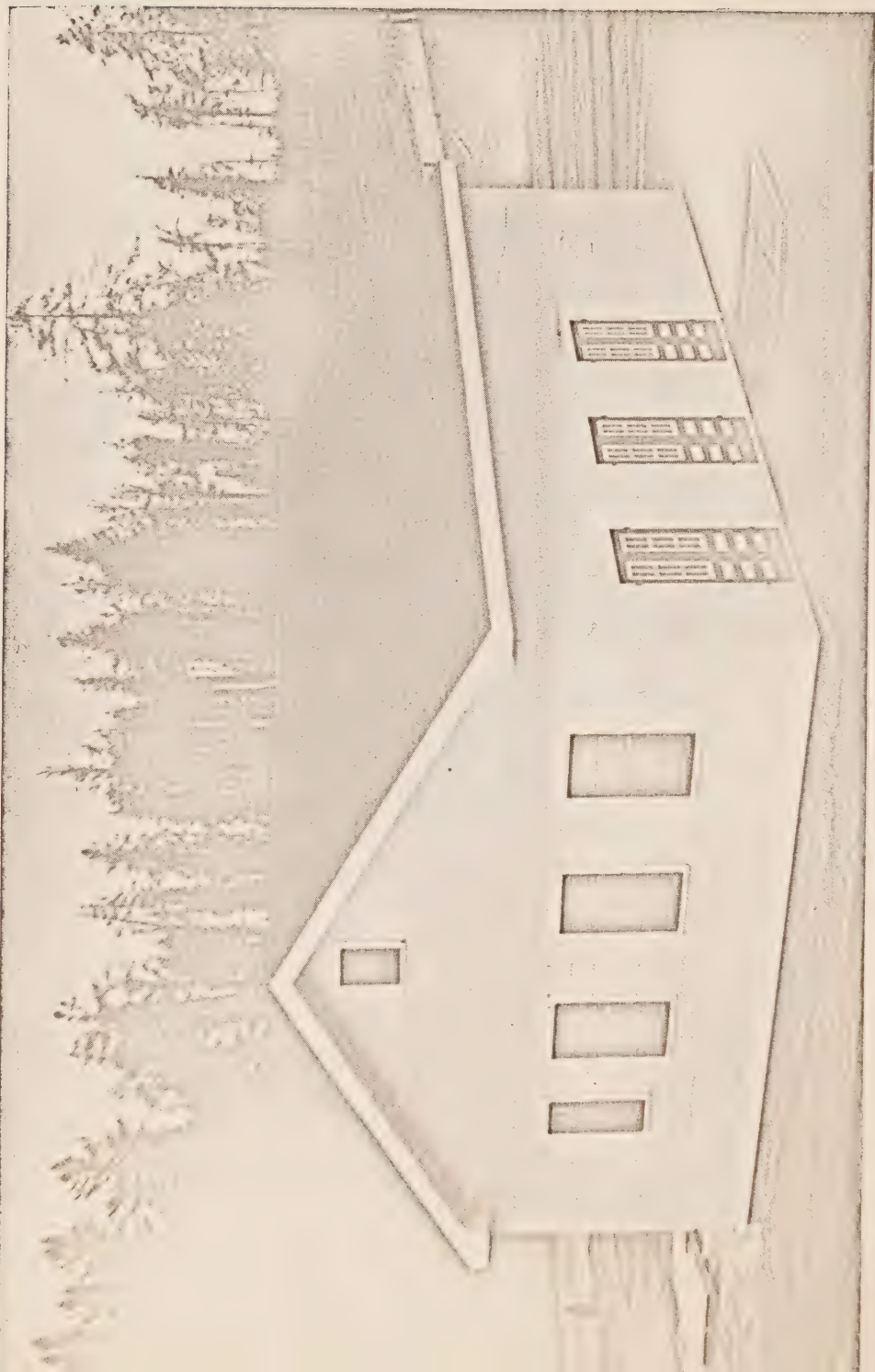
Schedule "D"

NORTHWEST TERRITORIES POWER COMMISSION

SNARE RIVER POWER PLANT

Expenditures for the Period April 1, 1949
to March 31, 1950

Brought Forward		\$65,263.26
Administrative and General Expenses:		
Salaries—Executives and Officers	\$5,026.77	
Salaries—Office and General Staff	1,618.50	
Travelling Expenses	6,367.43	
Advertising	21.36	
Telephone and Telegraph	404.73	
Postage	207.19	
Stationery and Office Supplies	810.16	
Employer's Contributions to:		
Superannuation Fund	301.61	
Unemployment Insurance	19.13	
Workmen's Compensation	88.90	
Hospitalization	8.17	
Medical Services	1.84	
Freight and Express	378.38	
Miscellaneous	992.88	
Net Cost of Rations—Staff Dining Room	5,533.91	21,780.96
		<hr/>
Interest on Long Term Debt		144,218.75
		<hr/>
Total Operating Expenses transferred to Income and Expenditures Schedule "C"		\$231,262.97
		<hr/> <hr/>



Powerhouse for diesel generating plant at Fort Smith, N.W.T.

Northwest Territories, Power Commission, Photo



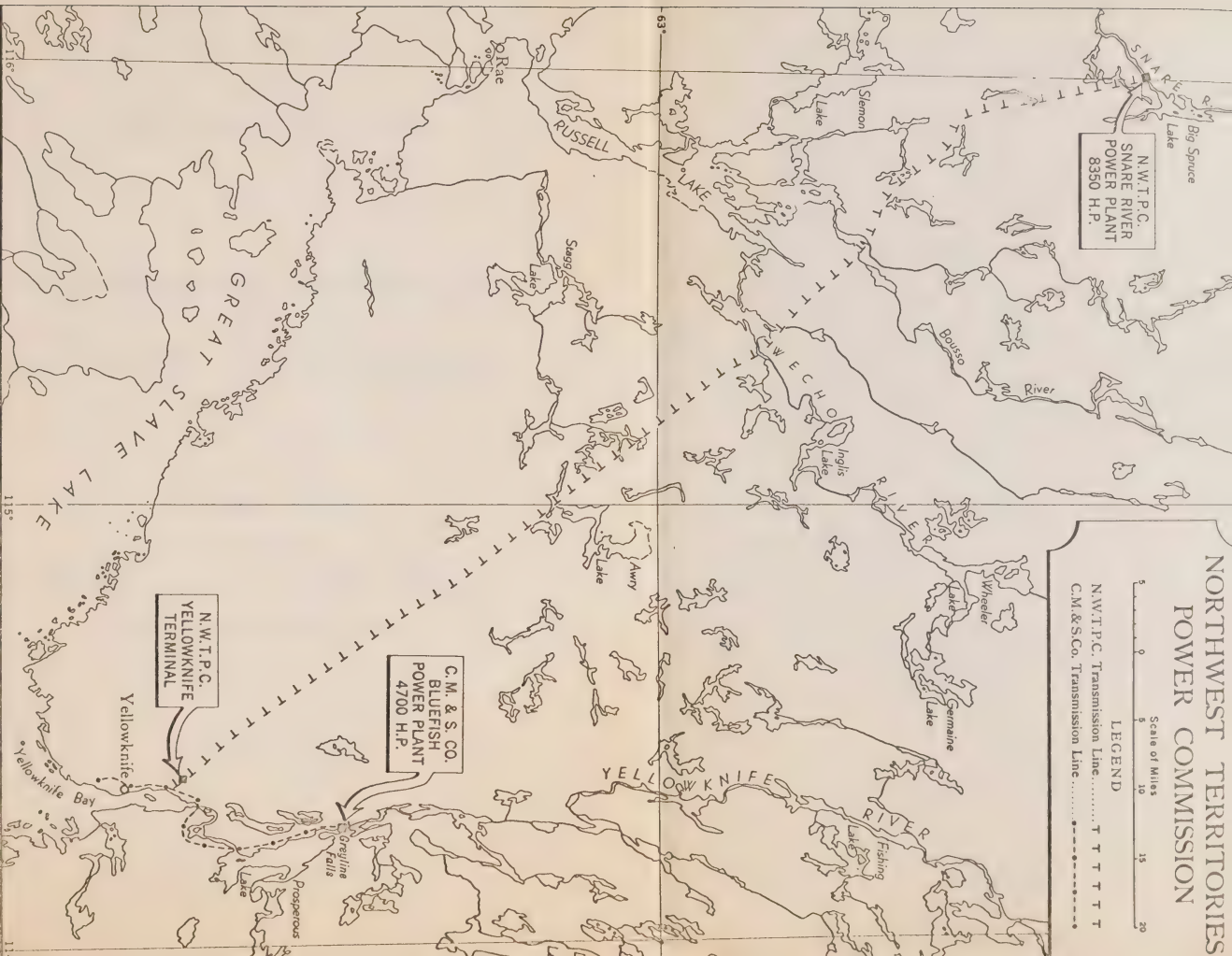
7000 KVA generator, Snare River Power Plant, N.W.T.

POWER COMMISSION

Scale of Miles
5 10

LEGEND

N.V.T.P.C. Transmission Line.....	T	T	T	T	T
C.M.&S.Co. Transmission Line	-----	-----	-----	-----	-----



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GOVERNMENT OF CANADA

✓
**Northwest Territories
Power Commission**

ANNUAL REPORT

OF THE

NORTHWEST TERRITORIES POWER COMMISSION

FOR THE FISCAL YEAR ENDED

MARCH 31, 1951

OTTAWA, CANADA

GOVERNMENT OF CANADA

✓
**Northwest Territories
Power Commission**

ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
MARCH 31, 1951

OTTAWA, CANADA

GOVERNMENT OF CANADA



Northwest Territories Power Commission

ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
MARCH 31, 1951

OTTAWA, CANADA

Northwest Territories Power Commission



June 26, 1951.

The Honourable Robert H. Winters, M.P., P.C.,
Minister of Resources and Development,
Ottawa, Ontario.

Dear Sir,—

I beg to submit herewith the report of the Northwest Territories Power Commission for the fiscal year ending March 31st, 1951, as required under Clause 26 of the Northwest Territories Power Commission Act, Chapter 64, 11-12 George VI, Revised Statutes.

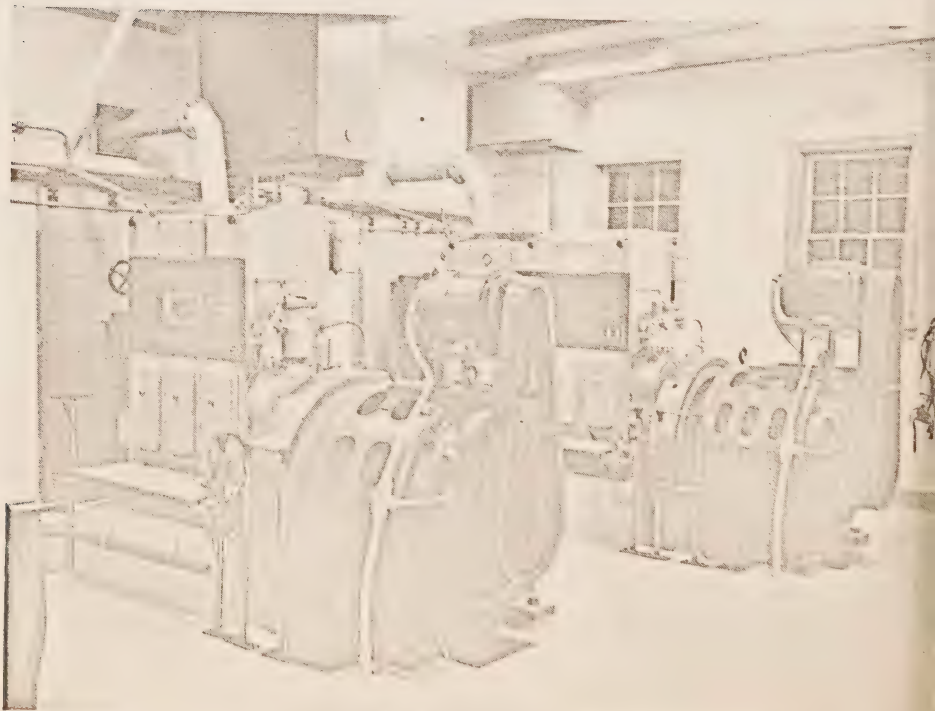
Respectfully submitted,

J. M. WARDLE,
Chairman.





Power House for Diesel Generating Plant with Fuel Storage Tank at Fort Smith, N.W.T.



Two of the three Generating Units (125 KVA and 187½ KVA) in Fort Smith Power Plant

NORTHWEST TERRITORIES POWER COMMISSION

HISTORY

The Northwest Territories Power Commission was created by an Act of Parliament in 1948 for the purpose of constructing and operating electric power plants to supply power to mines and other users in the Northwest Territories as the need arose. By an amendment to the Act in March 1950, its provisions were extended to include the Yukon Territory. The Act provides that power plants will be self-sustaining. Consequently the rates for power charged must provide sufficient revenue to cover interest on investment, payments on principal, and operating and maintenance expenses.

The Commission is the federal government's first agency concerned with the construction and management of electric power plants on a commercial basis. Over the past three years its operations have resulted in the establishment of a 8,350 h.p. hydro-electric development on the Snare River, which supplies power to the Yellowknife mining area and townsite 90 miles away; a 520 h.p. diesel generating plant supplying Fort Smith, N.W.T., and environs; and the design and commencement of construction of a second hydro-electric development of 3,000 h.p. initial capacity on the Mayo River near a large base metal mining area as described in this report.

Regular meetings of the Commission were held in 1950. The Chairman, who is also Director of the Engineering and Water Resources Branch, Department of Resources and Development, presided. The meetings were attended by other Departmental officials directly concerned with administration, including the Accountant of the Commission who is a member of the staff of the Comptroller of the Treasury, members of the Power Commission staff, and officials of other Departments of the Government of Canada who act in an advisory capacity as required.

SNARE RIVER PLANT

The operation of the Snare River power plant during 1950 can be regarded with satisfaction. Two minor interruptions occurred due to lightning strikes on the line. Two major shutdowns were also experienced. Due to mechanical trouble the continuous power supply was interrupted once for five hours, while another shutdown of fifteen hours took place for the annual inspection and

maintenance of the turbine at Snare and the simultaneous replacement along the transmission line of a crossarm that had been damaged by lightning.

When the Consolidated Mining and Smelting Company's Bluefish Lake power plant was undergoing repair during odd times during 1950, the Commission supplied all the requirements of the customers of this plant which included the Consolidated Mining and Smelting Company's mine, Negus Mines limited, and part of the requirements of the town of Yellowknife.

The distribution system in the Yellowknife area was enlarged in the year under review by arrangements, concluded with the Akaitcho Yellowknife Gold Mines Ltd., whereby the latter Company constructed a 33,000 volt line 9,300 feet in length from the Yellowknife terminal station to the Company's mine. Part of the terminal equipment to supply the new line was installed, and the balance is to be connected and tested in the summer of 1951. In October temporary connections were made to supply the Akaitcho camp load for the remainder of the winter and the line was energized. An agreement was drawn between the Company and the Commission whereby the Commission will take over the transmission line when the mine is prepared to sign a contract for the purchase of power. Engineering services in connection with the survey design and construction of this line were provided by the Commission. The latter purchased the necessary materials and equipment, with the exception of the poles, and arrangements were made with Akaitcho Yellowknife Gold Mines Ltd., whereby it will reimburse the Commission for the cost of such material and equipment. Actual construction of the line was carried out by the Akaitcho Yellowknife Gold Mines Ltd., to which the Commission loaned a lineman for this work, the Commission being reimbursed by the Mining Company for this employee's salary.

All Commission-owned permanent buildings have been maintained in first class condition with the carrying out of minor repairs. The Commission now has three self-contained fully modern houses at Snare River in addition to the staff house. These structures are all well insulated, steam heated and equipped with hot and cold water and electric ranges. A central electric boiler located in the powerhouse supplies the heating for these buildings.

In addition to supplying meals to salaried operating personnel, messing in the staff house is now provided for prevailing rate employees of the Commission at Snare River.

Work continued at Snare River on the construction of a combined office, warehouse and garage building which was practically completed at the close of the fiscal year. This building is fully insulated and heated by the central steam heating system. The majority of the material used in the construction of this building was salvaged from the original construction camp buildings or taken from surplus material left over from the construction of the power plant and permanent buildings; very little new material was purchased.

A map showing the Snare River power plant and transmission lines is included in this report.

FORT SMITH PLANT

Work on the Fort Smith power plant and distribution system which had been commenced in 1949-50 was resumed in May 1950 by means of the Commission's own staff augmented by day labour. The diesel engines, generators, and switch gear equipment which had been ordered in 1949 arrived in July and were installed forthwith. A distribution system consisting of 10.5 miles of 2400/4160 volt primary and 230/115 volt secondary lines was constructed. The generating plant consists of three diesel driven units having a total capacity of 520 h.p. housed in a fully insulated building of frame construction. The plant serves the Fort Smith settlement and area including the airport installation of the Department of Transport, the Royal Canadian Corps of Signals transmitting and receiving stations, and the R.C.M.P. and Resources and Development establishments. The plant was officially opened on October 12, 1950, by Mr. George Prudham, M.P., then Parliamentary Assistant to the Minister of Resources and Development.

MAYO RIVER POWER PROJECT

For some time the Commission has been requested to supply power to the Mayo River area of the Yukon Territory where activities in connection with the silver-lead-zinc mines of the Keno Hill and Galena Hill districts have been expanding.

Following studies and preliminary survey carried out in 1949, a contract for the design of a power plant on the Mayo River was awarded after tender calls to the Montreal Engineering Co., consulting engineers, of Montreal, Quebec, who also undertook to supervise the construction. The design provides for a powerhouse,

and a main dam of earth fill with impervious core. The dam will be 400 ft. in length and 105 ft. high with a maximum width at the base of 520 ft. The spillway is adjacent to the main dam and will be provided with two steel sluice gates 17 ft. x 25 ft., operated by motor hoist and fitted with electric heaters for operation in extremely low temperatures. Water storage will be provided in Mayo Lake about twenty miles upstream. Here a rock filled timber crib dam about 300 ft. long, 60 ft. wide x 15 ft. high will raise the level of the lake about 10 ft. to provide 250,000 acre-feet of storage. This dam will have two sluice ways fitted with stop logs.

Just above the main dam a tunnel 1200 ft. long with an approximate section of 10 ft. x 11 ft. is being excavated in a horseshoe shape. Near the powerhouse end the tunnel will split into two branches. One six feet in diameter will lead direct to the powerhouse for the initial turbine installation of 3000 h.p. at 110 ft. head, and the second branch eight ft. in diameter will serve as a diversion tunnel during construction. It will also be available to supply additional turbines if required to develop the maximum capacity of the site, estimated at 8,000 h.p.

On high ground above the powerhouse will be located the step-up substation. From this point about 25 miles of 66,000 volt transmission line will carry power to the Keno and Galena Hill areas. Six miles of 6900 volt line will supply the town of Mayo Landing. There will be a telephone circuit on the latter.

During the autumn of 1950, tenders were called for the rock excavation in connection with this plant, including the tunnel, spillway, surge tank shaft, and powerhouse foundations, and a contract was awarded to the Northern Construction Co. and J. W. Stewart Ltd., Vancouver, B.C. which submitted the lowest bid. Further tenders were invited for the construction of the dams and spillway, powerhouse, and staff quarters in January 1951, and the contract for this work was also awarded to the Northern Construction Co. and J. W. Stewart Ltd. The major items of plant equipment, such as the turbine, switch gear, step-up transformers, surge tank and sluice gates, and powerhouse crane, were ordered from Canadian suppliers after competitive tenders were obtained. Construction work began in March 1951, and is expected to be completed in the fall of 1952. For use during the construction of this project, the Commission arranged for a quantity of its construction equipment that was in storage at Yellowknife to be moved to Edmonton for thorough overhaul and shipment to Mayo Landing.

A map showing the Mayo River development and the mining area to be supplied is included in this report.

HAY RIVER POWER PROJECT

The Commission made further investigations into the power requirements of the Hay River settlement to determine the soil conditions for the engine foundations there. Following a request from a private firm which proposed to install a telephone line, the Commission agreed to joint use of its pole line in the Hay River townsite on the basis that the Commission charge rental to the telephone company for the use of the poles. During 1950 the Commission purchased poles for the Hay River distribution system which will have a total length of approximately six miles. The system was designed during the fiscal year and pole positions staked and surveyed in the field. Tenders were called from Canadian suppliers for engines, generators and switch gear, but pending further study of present and future requirements of power at Hay River it was decided not to proceed with this plant in the fiscal year 1951-52.

TRANSPORTATION

The Commission's Norseman aircraft was flown from Yellowknife to Edmonton at the time of the freeze-up in 1950 for its annual inspection and the renewal of the certificate of air worthiness. The Norseman plane has been used to fly mail, material and food supplies to Snare River, to make line patrol flights and to convey workmen to points at which repair or maintenance work was required. However, for reasons of economy and in conformance with Government policy to employ chartered air services wherever possible, it was decided to dispose of the Commission's aircraft. Toward the close of the fiscal year arrangements were being completed to sell the aircraft to a private company operating a chartered air service in Yellowknife under an agreement that would provide satisfactory air service for the Commission's need.

WATER STORAGE

During the twelve month period under review there was no shortage of water supply at the Snare River plant. Normal high water level is elevation 725 ft. and a peak of 726.95 ft. was reached during the year. The low level was 721.6 ft.

MISCELLANEOUS INVESTIGATIONS

At the request of the Water Resources Division, Department of Resources and Development, arrangements were continued for the Commission's field engineer to take periodic stream flow measurements on the Emile River, the Snare River (at Lake Wijin-nedie) and the Lockhart River.

During the summer months a member of the Power Commission's staff completed an investigation of the power facilities and requirements at a number of communities in the Northwest Territories. Points visited were Fort McPherson, Arctic Red River, Fort Good Hope, Fort Norman, Fort Simpson, Fort Providence, Fort Resolution and Coppermine.

The objectives of the survey were to determine whether the power supply facilities of the various government departments located in these settlements could be improved from the standpoint of economy and service and also to determine the practicability of installing central power plants that could be operated on a self-sustaining basis by the Power Commission.

It was found that in the majority of the settlements concerned, satisfactory arrangements for the supply of power had been made with the Royal Canadian Corps of Signals of the Department of National Defence; however, in two settlements that do not have Royal Canadian Signals radio stations it appeared that central generating plants should be installed and operated by the federal departments most concerned in order to provide an adequate and reliable supply.

Due to the relatively light loads available in the various communities a central plant operated by the Commission on a self-sustaining basis could be considered feasible for only two, viz., Fort Simpson and Fort Resolution, and only on the basis of the major government consumers guaranteeing a minimum consumption.

The Commission also provided technical advice to Eldorado Mining and Refining Co. Ltd. (1944) when the latter was making arrangements for power supply for their mining properties on the north shore of Lake Athabaska. Further technical assistance was given in connection with rates to be charged by the mining company for power surplus to their own operations which might be purchased by other mining operators in the district.

FUTURE PLANS

Plans for the fiscal year 1951-52 include the Mayo River development, completion of installation of terminal station facilities in connection with the transmission line supplying Akaitcho Yellowknife Gold Mines Ltd. at Yellowknife, and an investigation into the feasibility of providing power from the Snare River system to Discovery Yellowknife Gold Mines Ltd.

FINANCIAL

The Commission met, during the year, all interest, maintenance and operation charges on the Snare River plant and in addition retired principal in the amount of \$110,000. An amount of \$36,081 was reserved from revenue received in the fiscal year 1950-51 to meet the estimated cost of maintenance and operation during the first quarter of the fiscal year 1951-52.

The first annual amortization payment on the Fort Smith plant, which is in operation, will not fall due until March 31, 1952.

Included in this report is the consolidated balance sheet of the Commission as at March 31, 1951, certified by the Auditor General, which shows the financial standing of the Snare River, Fort Smith, Hay River and Mayo River plants. The Mayo River plant is currently under construction and certain supplies and materials for the distribution system for the Hay River plant have been purchased, but no actual construction has been undertaken. In addition to the consolidated balance sheet the following Statements are appended:

Schedule I	Statement of Income and Expenses
Schedule II	Statement of Operating Expenses
Schedule III	Statement of Maintenance Expenses
Schedule IV	Statement of Administration Expenses
Schedule V	Statement of Assets and Liabilities According to Location.

Individual Balance Sheets for Snare River and Fort Smith plants.

The Comptroller of the Treasury, Department of Finance supplied all accounting and financial services to the Commission.

Ottawa, June 28, 1951.

To the Chairman,
Northwest Territories Power Commission,
Ottawa, Ontario.

Dear Sir:

The accounts of Northwest Territories Power Commission having been audited under my direction, for the fiscal year ended March 31, 1951, I forward herewith the certified Balance Sheet as at the date of closing, together with the following supporting schedules:

Statement of Income and Expenses	(Schedule I)
Statement of Operating Expenses	(Schedule II)
Statement of Maintenance Expenses	(Schedule III)
Statement of Administrative and General Expenses	(Schedule IV)
Statement of Assets and Liabilities according to Location	(Schedule V).

Yours faithfully,

J. HOPKINSON,
Assistant Auditor General of Canada.

NORTHWEST TERRITORIES
(Established under the Northwest
BALANCE SHEET AS

ASSETS

Cash on Hand and in Bank.....	\$ 563,587
Accounts Receivable	94,463
Inventories—Food, as certified by the Management, at cost.....	3,566
Security Deposits—per contra:	
Cash in bank	\$ 1,850
Securities	160,000
	161,850
Prepaid Insurance	2,335
Fixed Assets:	
Power plants, distribution systems, con- struction plant, general plant and capital works under construction, at cost	4,795,763
Deduct, Charges against income for amortization of debt, in lieu of provision for depreciation and obsolescence	185,000
	4,610,763

5,436,564

Note: Details of assets and liabilities, according to locations,
are provided in Schedule V.

Certified Correct
(Sgd.) A. D. Wymbs, Accountant.

Approved
(Sgd.) J. M. Wardle, Chairman.

POWER COMMISSION

Territories Power Commission Act)

AT MARCH 31, 1951

LIABILITIES AND CAPITAL

Liabilities

Accounts Payable and Accrued Charges		\$ 42,207	
Salaries and Wages		3,736	
Security Deposits — per contra:			
Construction contractors	\$ 86,600		
Consumers	75,250	161,850	
			\$ 207,793

Capital

Government of Canada:

Advances received on Capital Account, under authority of s 17 (1) of the Act, repayable within 20 years with Interest at 3 1/8% p.a. (including \$110,000 repayable as at March 31, 1951)	5,178,254
--	-----------

Surplus

Balance as at April 1, 1950	39,444	
Net revenue for the year per Schedule I	\$ 121,073	
Deduct, Provision for amortization of debt	110,000	
	11,073	
		50,517
		5,228,771
		5,436,564

I have examined the accounts of the Northwest Territories Power Commission for the year ended March 31, 1951, and have obtained all the information and explanations I have required. Subject to the sufficiency or otherwise of the charges against revenue for amortization of debt to meet requirements arising from depreciation and obsolescence, the above Balance Sheet is, in my opinion, properly drawn up so as to exhibit a true and correct view of the state of the Commission's affairs as at March 31, 1951, according to the best of my information and the explanations given to me and as shown by the books of the Commission.

(Sgd.) J. Hopkinson
Assistant Auditor General of Canada.

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Income and Expenses
for the year ended March 31, 1951

	TOTAL	SNARE RIVER PLANT	FORT SMITH PLANT
Income			
Sales of power —			
Mines	\$ 292,341	\$ 292,341	
Commercial	36,421	31,305	5,116
Sales of lighting —			
Commercial	15,085		15,085
Domestic	6,545		6,545
Municipal	150		150
Connection charges	471		471
Rents —			
Staff house	1,055	1,055	
Cottages	1,098	1,098	
Construction equipment	377	377	
Interest	154	60	94
Total Income	<u>353,697</u>	<u>326,236</u>	<u>27,461</u>
Expenses			
Operating, per Schedule II	57,324	46,096	11,255
Maintenance, per Schedule III	11,992	11,661	331
Administrative and General, per Schedule IV	20,838	19,994	844
Interest	141,875	141,875	
Cash discounts on power and light accounts	595		595
Total Expenses	<u>232,624</u>	<u>219,599</u>	<u>13,025</u>
Net Revenue for the year, before provid- ing for retirement of debt, per Balance Sheet	<u>121,073</u>	<u>106,637</u>	<u>14,436</u>

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Operating Expenses
for the year ended March 31, 1951

	TOTAL	SNARE RIVER PLANT	FORT SMITH PLANT
Salaries and wages	\$ 43,826	\$ 39,876	\$ 3,950
Employer's contributions to employees' welfare schemes —			
Superannuation Fund, net	211	—26	237
Unemployment insurance	307	272	35
Workmen's compensation	663	600	63
Hospitalization	308	308	
Medical services	69	69	
Diesel oil	6,696		6,696
Aircraft — Norseman C.F.—P.A.B.	2,118	2,118	
Charter of aircraft	1,371	1,371	
Trucks, tractors, snowmobile, boat, etc.....	282	282	
Lubricating Oil	205		205
Supplies	1,175	1,109	66
Miscellaneous	93	90	3
Totals	<u>57,324</u>	<u>46,069</u>	<u>11,255</u>
Distributed as follows:			
Production of power	\$ 47,538	\$ 36,283	\$ 11,255
Transmission lines	6,015	6,015	
General plant	3,771	3,771	
Totals	<u>57,324</u>	<u>46,069</u>	<u>11,255</u>

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Maintenance Expenses
for the year ended March 31, 1951

	TOTAL	SNARE RIVER PLANT	FORT SMITH PLANT
Aircraft Norseman C.F.—P.A.B.	\$ 5,889	\$ 5,889	
Conductors and insulators	1,528	1,528	
Insurance	892	600	\$ 292
Transportation equipment	647	647	
Turbines	603	603	
Transformers and meters	575	575	
Furniture and fixtures	300	300	
Poles and fixtures	284	284	
Construction Equipment	145	145	
Generators	138	138	
Communication systems	134	134	
Reservoirs, dams and waterways	119	119	
Structures and improvements	108	108	
Sub-stations	62	62	
Engines	27		27
Accessory electrical equipment	22	11	11
Miscellaneous power plant equipment	249	248	1
Miscellaneous	270	270	
Totals	<u>11,992</u>	<u>11,661</u>	<u>331</u>
Distributed as follows:			
Production of power	\$ 1,455	\$ 1,123	\$ 331
Transmission lines	2,614	2,614	
General Plant	7,924	7,924	
Totals	<u>11,992</u>	<u>11,661</u>	<u>331</u>

NORTHWEST TERRITORIES POWER COMMISSION
Statement of Administration and General Expenses
for the year ended March 31, 1951

	TOTAL	SNARE RIVER PLANT	FORT SMITH PLANT
Salaries — executives and officers.....	\$ 5,944	\$ 5,595	\$ 349
Salaries and wages	1,475	1,411	64
Employer's contributions to employees' welfare schemes —			
Superannuation Fund, net	372	349	23
Unemployment insurance	37	35	2
Workmen's compensation	105	99	6
Hospitalization	14	14	
Medical Services	3	3	
Travel expense	4,654	4,625	29
Freight and express	476	474	2
Stationery and office supplies	500	277	223
Telephone and telegraph	269	269	
Postage	209	127	82
Special services	100	100	
Miscellaneous	1,047	983	64
Boarding house—excess of food costs over recoveries of \$3,283	5,633	5,633	
Total	20,838	19,994	844

NOTE: Not included among the expenses above are the costs of certain services and accommodation at Ottawa which are provided to the Commission without charge: they include (a) the Comptroller of the Treasury's accounting services and (b) administrative office accommodation.

NORTHWEST TERRITORIES POWER COMMISSION
Statement of Assets and Liabilities according to Location

as at March 31, 1951

ASSETS	TOTAL	SNARE RIVER PLANT	FORT SMITH PLANT
Cash on hand and in bank	\$ 563,587	\$ 58,724	\$ 12,8
Accounts receivable	94,463	89,688	4,7
Inventories	3,566	3,566	
Security deposits —			
Cash in bank	1,850		2
Securities	160,000	50,000	
Prepaid insurance	2,335	2,335	
Inter-plant loan			4,8
Fixed assets, as summarized below	4,610,763	4,430,037	133,0
Total Assets	<u>5,436,564</u>	<u>4,634,350</u>	<u>155,6</u>
LIABILITIES			
Accounts payable and accrued charges	42,207	4,994	2,2
Salaries and wages	3,736	3,275	4
Security deposits, per contra—			
Construction contractors	86,600		
Consumers	75,250	50,000	2
Total Liabilities	<u>207,793</u>	<u>58,269</u>	<u>3,0</u>
CAPITAL			
Government of Canada: Advances for Capital			
Account	5,178,254	4,540,000*	138,2
Surplus:			
Opening balance as at April 1, 1950	39,444	39,444	
Net revenue for the year, per Schedule I	121,073	106,637	14,4
Provision for amortization of debt	—110,000	—110,000	
Total Capital	<u>5,228,771</u>	<u>4,576,081</u>	<u>152,6</u>
Total Liabilities and Capital	<u>5,436,564</u>	<u>4,634,350</u>	<u>155,6</u>
Summary of Fixed Assets			
Production plant	2,572,360	2,478,546	93,8
Transmission plant	1,356,532	1,356,532	
Interconnecting transmission line	37,492	37,492	
General plant	498,466	497,533	9
Construction Plant	244,934	244,934	
Distribution plant	38,269		38,2
Capital works under construction	47,710		
Total Fixed Assets	<u>4,795,763</u>	<u>4,615,037</u>	<u>133,01</u>
Deduct, charges against income for amortization of debt in lieu of provision for depreciation and obsolescence	—185,000	—185,000	
Totals	<u>4,610,763</u>	<u>4,430,037</u>	<u>133,01</u>

Note: *This includes \$110,000 repayable as at March 31 1951.

NORTHWEST TERRITORIES POWER COMMISSION
Statement of Assets and Liabilities according to Location
as at March 31, 1951

Schedule V

Schedule IV

MISSION

Expenses

51

ASSETS

	TOTAL	SNARE RIVER PLANT	FORT SMITH PLANT	MAYO RIVER PROJECT	HAY RIVER PROJECT
Cash on hand and in bank	\$ 563,587	\$ 58,724	\$ 12,857	\$ 491,823	\$ 183
Accounts receivable	94,463	89,688	4,775		
Inventories	3,566	3,566			
Security deposits —					
Cash in bank	1,850		250	1,600	
Securities	160,000	50,000		110,000	
Prepaid insurance	2,335	2,335			
Inter-plant loan			4,800		—4,800
Fixed assets, as summarized below	4,610,763	4,430,037	133,016	42,998	4,712
Total Assets	5,436,564	4,634,350	155,698	646,421	95

LIABILITIES

Accounts payable and accrued charges	42,207	4,994	2,297	34,821	95
Salaries and wages	3,736	3,275	461		
Security deposits, per contra—					
Construction contractors	86,600			86,600	
Consumers	75,250	50,000	250	25,000	
Total Liabilities	207,793	58,269	3,008	146,421	95

CAPITAL

Government of Canada: Advances for Capital					
Account	5,178,254	4,540,000*	138,254	500,000 ²	
Surplus:					
Opening balance as at April 1, 1950	39,444	39,444			
Net revenue for the year, per Schedule I	121,073	106,637	14,436		
Provision for amortization of debt	—110,000	—110,000			
Total Capital	5,228,771	4,576,081	152,690	500,000	
Total Liabilities and Capital	5,436,564	4,634,350	155,698	646,421	95

Summary of Fixed Assets

Production plant	2,572,360	2,478,546	93,814		
Transmission plant	1,356,532	1,356,532			
Interconnecting transmission line	37,492	37,492			
General plant	498,466	497,533	933		
Construction plant	244,934	244,934			
Distribution plant	38,269		38,269		
Capital works under construction	47,710			42,998	4,712
Total Fixed Assets	4,795,763	4,615,037	133,016	42,998	4,712
Deduct, charges against income for amortization of debt in lieu of provision for depreciation and obsolescence	—185,000	—185,000			
Totals	4,610,763	4,430,037	133,016	42,998	4,712

Note: *This includes \$110,000 repayable as at March 31 1951.

in services and accommoda-
charge: they include (a) the
ative office accommodation.

NORTHWEST TERRITORIES

SNARE RIVER

BALANCE SHEET AS

ASSETS

Current:

Cash in Bank Accounts	\$	58,251.52	
Advance Outstanding		284.40	
Accounts Receivable		89,628.45	
Postage and Unemployment			
Insurance Stamps on Hand		187.47	
Inventories — Food Supplies		3,565.51	
Guarantee Deposit		60.00	\$ 151,977.35
<hr/>			
Securities Deposited Under Consumer's Guarantee			50,000.00
Deferred Charges — Prepaid Insurance			2,335.00

Fixed:

Production Plant	2,478,546.09	
Transmission Plant	1,356,531.55	
Interconnecting Transmission Line	37,492.40	
General Plant	497,533.53	
Construction Plant	244,934.05	4,615,037.62
<hr/>		
		<u>\$4,819,349.97</u>

Certified Correct:

(Sgd.) A. D. Wymbs

Accountant.

POWER COMMISSION
POWER PLANT
AT MARCH 31, 1951

LIABILITIES

Current:

Accounts Payable	\$	2,865.06	
Accrued Salaries and Wages		5,266.05	
Unclaimed Wages		28.00	
Long Term Debt			
(Payable March 31, 1951)		<u>110,000.00</u>	\$ 118,159.11
Customer's Deposits — Power Contract			
Deposits			50,000.00
Deferred Credits—Miscellaneous			110.00
Long Term Debt			
Government of Canada 3 1/8%			
Loan secured by Final			
Certificate of Indebtedness			4,430,000.00
Reserve for Retirement of Long Term			
Debt			185,000.00
Surplus			36,080.86

\$ 4,819,349.97

Approved:

(Sgd.) J. M. Wardle

Chairman.

NORTHWEST TERRITORIES

FORT SMITH

BALANCE SHEET AS

ASSETS

Current:

Cash in Bank Accounts	\$ 13,020.36	
Advance Outstanding	84.12	
Accounts Receivable	4,775.00	
Postage and Unemployment Insurance		
Stamps on Hand	2.64	
Loan from Capital Funds to Hay River		
Power Project	<u>4,800.00</u>	\$ 22,682.12

Fixed:

Production Plant	93,814.20	
Distribution Plant	38,268.95	
General Plant	<u>932.63</u>	<u>133,015.78</u>
		\$ <u><u>155,697.90</u></u>

Certified Correct:

(Sgd.) A. D. Wymbs

Accountant.

POWER COMMISSION
POWER PLANT
AS AT MARCH 31, 1951

LIABILITIES

Current:

Accounts Payable	\$ 1,784.24	
Accrued Salaries and Wages	<u>974.06</u>	\$ 2,758.30
Customer's Deposits — Power Contract Deposits		250.00
Long Term Debt Government of Canada 3 1/8% Loan Secured by Interim Certificates of Indebtedness	135,000.00	
Accrued Interest to March 31, 1951	<u>3,253.84</u>	138,253.84
Surplus		<u>14,435.76</u>
		<u>\$ 155,697.90</u>

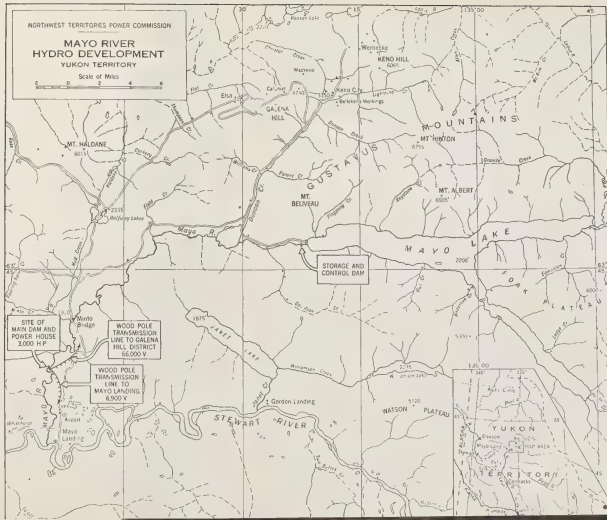
Approved:

(Sgd.) J. M. Wardle

Chairman.

MAYO RIVER
HYDRO DEVELOPMENT
YUKON TERRITORY

Scale of Miles



NORTHWEST TERRITORIES POWER COMMISSION

Scale of Miles

0 10 20 30

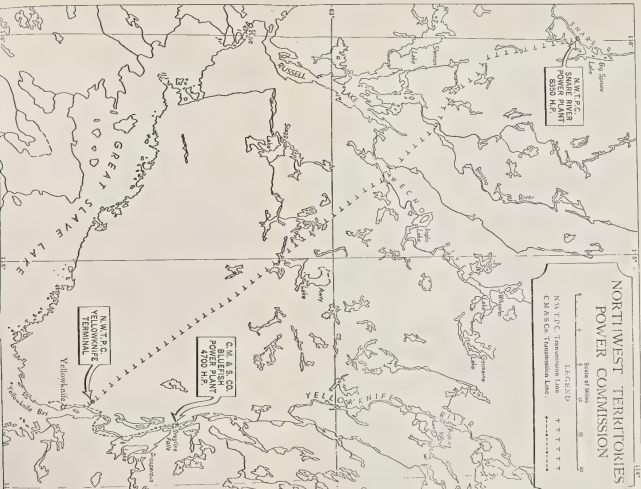
LEGEND

N.W.T.P.C. Transmission Line
C.M.S.Co. Transmission Line

N.W.T.P.C.
SNARE RIVER
POWER PLANT
8350 H.P.

C.M. & S. CO.
BLUEFISH
POWER PLANT
4700 H.P.

N.W.T.P.C.
YELLOWKNIFE
TERMINAL



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A 56

Government
Publications

GOVERNMENT OF CANADA

Northwest Territories Power Commission

ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1952

OTTAWA, CANADA



GOVERNMENT OF CANADA

Northwest Territories Power Commission

ANNUAL REPORT
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FOR THE FISCAL YEAR ENDED
March 31, 1952

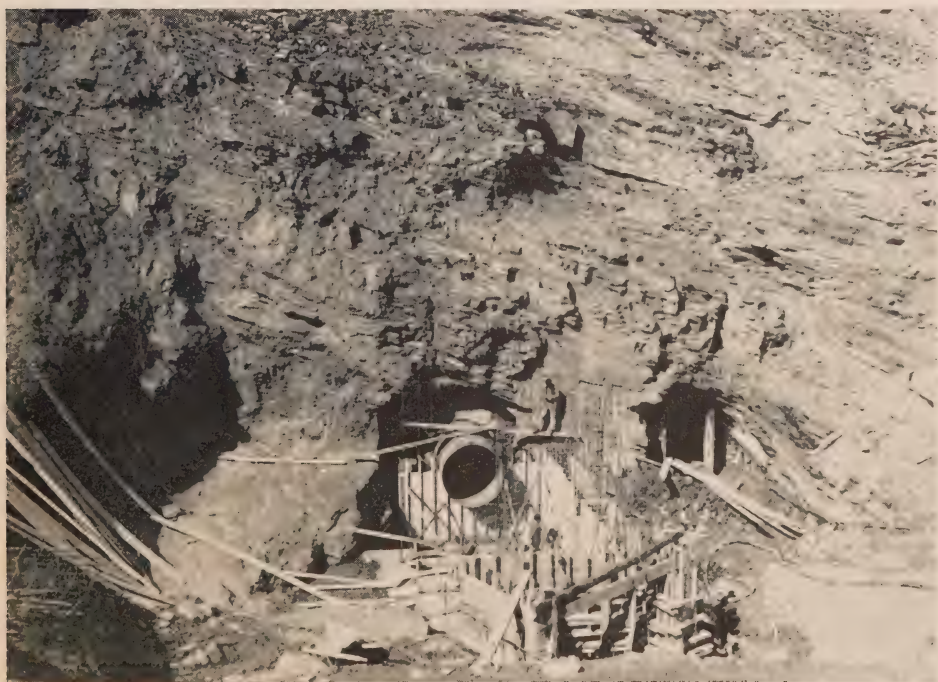
OTTAWA, CANADA

Mayo River above cofferdam, during spring breakup; cofferdam sluice way at lower left





Downstream view of partially completed storage dam at Mayo Lake



Form work for structure of Mayo powerhouse

Northwest Territories Power Commission

May 12, 1952.

The Honourable Robert H. Winters, M.P., P.C.,
Minister of Resources and Development,
Ottawa, Ontario.

Dear Sir,—

I beg to submit herewith the report of the Northwest Territories Power Commission for the fiscal year ending March 31st, 1952, as required under Clause 26 of the Northwest Territories Power Commission Act, Chapter 64, 11-12 George VI, Revised Statutes.

Respectfully submitted,

J. M. WARDLE,
Chairman.

NORTHWEST TERRITORIES POWER COMMISSION

HISTORY

The Northwest Territories Power Commission was created by an Act of Parliament in 1948 for the purpose of constructing and operating electric power plants to supply power to mines and other users in the Northwest Territories as the need arose. The Act was amended in March, 1950, to include the Yukon Territory. The Act provides that power plants will be self-sustaining, and consequently the rates charged for power must provide sufficient revenue to cover interest on investment, payments on principal, and operating and maintenance expenses.

The Commission is the Federal Government's first agency concerned with the construction and management of electric power plants on a commercial basis. Over the past four years its operations have resulted in the establishment of an 8,350 horse power hydro-electric development on the Snare River, some 90 miles northwest of Yellowknife, which supplies power to the Yellowknife mining area and townsite; a 520 horse power diesel generating plant supplying Fort Smith, N.W.T., and environs; and good progress has been made on the construction of a hydro-electric development of 3,000 horse power initial capacity on the Mayo River some six miles north of Mayo Landing, Y.T., which will supply power to the base metal mining area on Keno and Galena Hills. In the initial construction of the Mayo development provision is being made for future expansion to its ultimate capacity of 8,000 horse power.

Regular meetings of the Commission were held in 1951. The Chairman, who is also Director of the Engineering and Water Resources Branch, Department of Resources and Development, presided. The meetings were attended by other Departmental officials directly concerned with administration, including the Accountant of the Commission who is a member of the staff of the Comptroller of the Treasury, members of the Power Commission staff, and officials of other Departments of the Government of Canada who act in an advisory capacity as required.

The Commission reports with regret the death in January, 1952, of Mr. John A. Pounder, B.A.Sc., of the Department of Resources and Development, who acted as Secretary of the Commission since its establishment in September 1948. Mr. Pounder's

services and deep interest in the affairs of the Commission will be greatly missed.

SNARE RIVER POWER PLANT

No major operating difficulties were experienced in connection with the Snare River Hydro-Electric Power Plant during 1951. Two minor interruptions to service were caused by lightning in the month of July. Two major shutdowns occurred, one of which was the annual shutdown for inspection and maintenance of the turbine and generator at Snare River; the other, an eight hour interruption to service, occurred when a circuit breaker in the plant switchgear developed an internal fault necessitating a major shutdown while repairs were carried out.

During the month of March, 1951, a thorough patrol of the transmission line from Snare River to Yellowknife was carried out by Commission staff with the aid of the Commission's snowmobile. No major defects were found except for one pole that appeared to have been damaged by lightning. This pole was replaced during the maintenance shutdown in July.

The temporary suspension of work by the Akaitcho Yellowknife Gold Mine Limited shortly after completion of the transmission line to serve that property was a disappointment, and consequently the completion of the Yellowknife terminal station facilities to feed the Akaitcho transmission line was deferred.

During the early part of the year discussions were held with the Discovery Yellowknife Mines Ltd., with a view to providing power to that company from the Snare River system. The initial investigation, however, did not indicate that the immediate power requirements would justify the Commission undertaking the investment required to make power available to this property. Following additional development work carried out by the mining company further discussions were held in the latter part of the year, which culminated in a decision by Discovery Yellowknife Mines Ltd., to undertake the construction of a transmission line to its property, some 42 miles in length, at its own expense. The Commission will sell power to the mining company on a consumption basis and will provide the necessary metering and switching equipment. It was also agreed that should conditions warrant it, the Commission would, at a later date, consider taking over the transmission line; with this in mind the mining company agreed to submit its plans and specifications of the transmission line to the

Commission for approval. The completion of this transmission line in early 1953 will provide the Commission with a substantial increase in primary load.

Due to the installation of an additional electric boiler by the Giant Yellowknife Gold Mines Limited the power output of the Snare River plant approached plant capacity on several occasions in the winter months of 1951/52; while this type of load is attractive it is of relatively short duration and the revenue is at secondary power rates. A good deal of primary power capacity is still available since the secondary power load, consisting of electric boilers, can always be reduced, as required, in favour of more remunerative primary power.

Total power generated was 32,789,000 KWHrs. of which 15,427,108 KWHrs. was sold as secondary power. The highest peak load during the year was 6800 KW.

All permanent buildings owned by the Commission have been maintained in first class condition with the carrying out of minor repairs. The Commission now has three fully modern self-contained houses at Snare River in addition to the staff house. These are all well insulated, steam heated and equipped with hot and cold water and electric ranges. A central electric boiler located in the powerhouse supplies the heating for these buildings.

The construction of a combined office, warehouse and garage at Snare River was completed and the building was occupied in July, 1951.

In addition to supplying meals to salaried operating personnel, messing in the staff house is provided for prevailing rate employees on the Commission's Snare River staff.

A map showing the location of the Snare River Power Plant and main transmission line is included in this report.

FORT SMITH PLANT

The year ending March 31st, 1952 marked the first full year of operation of the Fort Smith Power Plant and this project can be regarded with satisfaction. Generating equipment and distribution lines were fully maintained by following a careful maintenance programme. One short extension was made to the distribution system. The number of private customers served increased over the year. Only one complete power failure occurred, which

had a duration of only three minutes, and was caused by a faulty automatic shutdown protective device.

In the latter part of the fiscal year the Commission decided to purchase a service truck and erect an addition to the power house to serve as a garage and to provide additional work area and storage space.

MAYO RIVER HYDRO ELECTRIC DEVELOPMENT

Actual construction work on the Mayo River Hydro-Electric Development commenced in March of 1951 and continued through to early December when the construction camp was closed down for the winter months. In addition to the tunnel, the excavations for the intake structure, power house and surge tank were completed and the excavations for the main dam core trench and the spillway were well advanced. The concrete lining of the tunnel was completed except for a few feet of the intake structure; grouting of the tunnel lining was also completed. Construction of the power-house foundations and sub-structure reached the stage that the turbine scroll case may be installed. The surge tank, and staff quarters and garage buildings were partially completed.

The storage dam below the outlet at Mayo Lake was approximately 80% completed. Some difficulty was encountered due to permafrost in the banks at either end of the storage dam structure. This was the chief contributing factor in preventing the work to be done at this site being completed in the 1951 season, as originally planned, however, it is not anticipated that this delay will have any effect on the date of completion of the project.

A total of 1865 feet of tunnel, including the diversion sections which will later be sealed off, and the vertical surge tank shaft, were driven and lined with concrete. The average tunnel section was approximately 10' wide by 10' 6" high before lining; the finished section is horseshoe shaped having a maximum width of 8' x 7' 4" high. The total amount of tunnelling exceeded that contemplated in the original design by approximately 225 feet due to the necessity of a longer power house adit. In excavating the tunnel a fault zone was encountered, which would not have been serious had the fault not extended to the proposed site of the power house, making satisfactory foundations for the latter difficult to obtain. The power house was accordingly relocated some 250 feet upstream, which necessitated a longer adit to join up with the tunnel.

Practically all equipment and supplies have been ordered and deliveries are satisfactory.

Towards the close of the fiscal year tenders were called for the construction of the 69,000 volt transmission line approximately 32 miles in length and extending to the Keno and Galena Hill area, and also the 6,900 volt distribution lines in the power plant area with extension to Mayo townsite. Since all bids received were considerably in excess of the estimated cost it was decided not to accept any tender and the Commission's Consulting Engineers were instructed to explore the possibilities of negotiating a contract. At the close of the fiscal year a satisfactory arrangement was nearing completion under terms considerably more favourable to the Commission than any of the tenders received.

The unforeseen difficulties at the storage dam and the additional tunnelling resulted in the construction season extending further into the winter months than had been anticipated, but the construction programme is substantially up to schedule. All phases of the work that contain any elements of risk have been completed and it is fully expected that the project will be delivering power in the fall of 1952, as planned.

A map showing the location of the Mayo River development and the associated mining area to which power will be supplied is included in this report.

HAY RIVER POWER PROJECT

Consequent on the granting of a franchise by the Local Administrative District of Hay River to a private company for the supply of power to the Hay River settlement, the Commission abandoned its plans for the establishment of a power plant at this point. The Commission was successful in selling, at cost, a supply of poles and pole line hardware that were on hand at Hay River.

TRANSPORTATION

Early in the year an agreement was negotiated and completed with a private company operating chartered air service out of Yellowknife, under which the Commission's Norseman aircraft was sold to the company in exchange for a specified number of hours of flying service over a period of thirty four months.

This company, and its successor, provided the Commission with satisfactory service throughout the year.

WATER STORAGE—SNARE RIVER

During the twelve month period under review there was an adequate water supply at the Snare River plant. Normal high water level is elevation 725 ft. and a peak of 726.98 ft. was reached in mid-September. The level remained substantially constant until mid-October and then fell progressively, the elevation being 722.40 at the end of March, 1952.

MISCELLANEOUS INVESTIGATIONS

At the request of the Water Resources Division, Department of Resources and Development, arrangements were continued for the Commission's field engineer to take periodic stream flow measurements on the Emile River, The Snare River (at Lake Wijinnedi) and the Lockhart River.

During the year the Commission requested the Water Resources Branch to undertake an investigation in the Yukon territory with a view to locating a hydro electric power site in the Whitehorse district that would permit the economic development of sufficient power to supply the entire requirements (both Civil and Military) of the Whitehorse area. The report had not been received at the close of the fiscal year.

FUTURE PLANS

Plans for the fiscal year 1952-53 include the completion of the Mayo River Development, the construction of the authorized addition to the Fort Smith Power Plant to provide garage space for a service truck and additional storage and work area, and the construction of a switching and metering station to supply the Discovery Yellowknife Mines Ltd. transmission line.

FINANCIAL

As stated previously herein, the Commission operates on a self-sustaining basis. Advances are made by the Minister of Finance for an amount sufficient to take care of the construction of the various plants. Each plant is considered as a separate project. This means that the revenue accruing to any one plant from the sale of power may not be diverted to any other plant. The loans or advances made by the Minister of Finance are amortized for different periods. The loan for each plant is treated separately.

The third annual payment, which fell due on the 31st of March 1952, on account of the Snare River Hydro-Electric Plant, amounted to \$325,513.12, consisting of principal in the amount of \$187,075.62 and \$138,437.50 on account of interest. This has been paid in full to the Minister of Finance.

The annual payment on the Fort Smith Diesel Electric Plant amounts to \$9,400.56. This is the first instalment on this plant and was due on the 31st of March 1952. The annual payment consists of principal in the amount of \$5,172.59 and interest amounting to \$4,227.97. This instalment has been paid in full. Revenue earned was up to expectations and all customers' accounts were collected in full.

The Mayo River Hydro-Electric Plant is under construction, currently. The amount invested in this development as at the 31st of March 1952, is indicated in the attached balance sheet.

The Hay River Power Project has been closed out. The outstanding obligations amounting to \$1,657.43 will be liquidated from a vote provided in the Further Supplementary Estimates of the Department of Resources and Development for the fiscal year 1951-52.

Included in this report is the Consolidated Balance Sheet of the Commission as at March 31st, 1952, certified by the Auditor General of Canada, which reflects the financial standing of the Snare River and Fort Smith Plants and Projects at Hay River and Mayo River. In addition to the consolidated balance sheet the following statements are appended:—

Schedule I	Statement of Income and Expenses
Schedule II	Statement of Operating Expenses
Schedule III	Statement of Maintenance Expenses
Schedule IV	Statement of Administrative and General Expenses
Schedule V	Statement of Assets and Liabilities according to Location.

Individual Balance Sheets for the Snare River and Fort Smith Plants and the Hay River and Mayo River Projects.

The Comptroller of the Treasury, Department of Finance supplied all accounting and financial services to the Commission.

Ottawa, May 19, 1952.

The Chairman,
Northwest Territories Power Commission,
Ottawa, Ontario.

Dear Sir:

The accounts of Northwest Territories Power Commission having been audited under my direction, for the fiscal year ended March 31, 1952, I forward herewith the certified Balance Sheet as at the date of closing, together with the following supporting schedules:

Statement of Income and Expenses	(Schedule I)
Statement of Operating Expenses	(Schedule II)
Statement of Maintenance Expenses	(Schedule III)
Statement of Administrative and General Expenses	(Schedule IV)
Statement of Assets and Liabilities according to Location	(Schedule V)

Yours faithfully,

(Sgd) WATSON SELLAR
Auditor General of Canada.

NORTHWEST TERRITORIES

(Established under the Northwest

BALANCE SHEET AS

ASSETS

Cash on Hand and in Bank.....	\$	435,869	
Accounts Receivable.....		122,561	
Inventories—Food and returnable containers, as certified by the Management, at cost.....		4,234	
Security Deposits—per contra:			
Cash on hand and in bank.....	\$	49,875	
Securities.....		135,000	
			184,875
Prepaid Insurance.....			1,876
Fixed Assets:			
Power plants, distribution systems, general plant, construction plant, and capital works under construction, at cost.....		6,201,750	
Deduct , Charges against income for amortization of debt, in lieu of provision for depreciation and obsolescence.....		377,248	
			5,824,502

\$ 6,573,917

Note: Details of assets and liabilities, according to locations,
are provided in Schedule V.

Certified correct

(Sgd.) A. D. Wymbs, Accountant.

Approved

(Sgd.) J. M. Wardle, Chairman.

POWER COMMISSION

(Territories Power Commission Act)

AT MARCH 31, 1952

LIABILITIES AND CAPITAL

Liabilities

Accounts Payable and Accrued Charges .	\$	110,681
Salaries and Wages.....		6,887
Security Deposits—per contra:		
Construction contractors.....	\$	109,500
Consumers.....		75,375
		<hr/>
		184,875
	\$	302,443

Capital

Government of Canada:

Advances received on Capital Account, repayable within 20 years with interest at 3 1/8% p.a. (including \$187,075 re- payable as at March 31, 1952), under authority of s. 17(1) of the Act.....	6,259,081
repayable on or before May 1, 1952, under authority of s. 17(2) of the Act. . .	5,161
	<hr/>
	6,264,242

Surplus

Balance as at April 1, 1951.....	50,517
Net revenue for the year, per Schedule I.	148,963
	<hr/>
	199,480
Deduct, Provision for amortization of debt, per Schedule V.....	192,248
	<hr/>
	7,232
	<hr/>
	6,271,474
	<hr/>
	\$ 6,573,917

I have examined the accounts of the Northwest Territories Power Commission for the year ended March 31, 1952, and have obtained all the information and explanations I have required. Subject to the sufficiency or otherwise of the charges against revenue—for amortization of debt—to meet requirements arising from depreciation and obsolescence, the above Balance Sheet is, in my opinion, properly drawn up so as to exhibit a true and correct view of the state of the Commission's affairs as at March 31, 1952, according to the best of my information and the explanations given to me and as shown by the books of the Commission.

(Sgd.) Watson Sellar
Auditor General of Canada.

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Income and Expenses
for the year ended March 31, 1952

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>
Income			
Sales of power—			
Mines.....\$	301,025	\$ 301,025	
Commercial.....	45,025	33,213	\$ 11,812
Sales of lighting—			
Commercial.....	29,576		29,576
Domestic.....	11,004		11,004
Municipal.....	360		360
Connection charges.....	202		202
Rents—			
Staff house.....	1,021	1,021	
Cottages.....	867	867	
Interest.....	2,466	2,403	63
Total Income.....	<u>391,546</u>	<u>338,529</u>	<u>53,017</u>
Expenses			
Operating, per Schedule II	70,451	47,388	23,063
Maintenance, per Schedule III.....	3,669	3,387	282
Administrative and general, per Schedule IV.....	24,070	20,278	3,792
Interest.....	142,667	138,438	4,229
Cash discount on power and light accounts.....	1,726		1,726
Total Expenses.....	<u>242,583</u>	<u>209,491</u>	<u>33,092</u>
Net Revenue for the year, before provid- ing for retirement of debt, per Balance Sheet.....	<u>148,963</u>	<u>129,038</u>	<u>19,925</u>

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Operating Expenses

for the year ended March 31, 1952

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>
Salaries and wages.....\$	46,022	\$ 35,828	\$ 10,194
Employer's contributions to employees' welfare schemes —			
Superannuation Fund, net.....	730	119	611
Unemployment Insurance	373	289	84
Workmen's Compensation	586	455	131
Hospitalization and Medical Services ...	352	352	
Diesel oil.....	11,197		11,197
Charter of aircraft.....	9,322	9,322	
Tractors, snowmobile, boat, etc.....	168	168	
Lubricating oil.....	547		547
Supplies.....	917	622	295
Miscellaneous.....	237	233	4
Totals.....	<u>70,451</u>	<u>47,388</u>	<u>23,063</u>

Distributed as follows:

Production of power.....\$	53,896	\$ 30,835	\$ 23,061
Transmission system.....	7,065	7,063	2
General Plant.....	9,490	9,490	
Totals.....	<u>70,451</u>	<u>47,388</u>	<u>23,063</u>

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Maintenance Expenses

for the year ended March 31, 1952

	<u>TOTAL.</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>
Insurance.....\$	619	\$ 619	\$
Transportation equipment.....	866	866	
Transformers and meters.....	72	72	
Furniture and fixtures.....	261	261	
Poles and fixtures.....	49		49
Construction equipment.....	50	50	
Generators.....	54	22	32
Communication systems.....	21	21	
Reservoirs, dams and waterways.....	68	68	
Structures and improvements.....	299	290	9
Engines.....	120		120
Street lighting equipment.....	20		20
Accessory electrical equipment.....	778	768	10
Miscellaneous power plant equipment.....	38	38	
Miscellaneous.....	354	312	42
Totals.....	3,669	3,387	282

Distributed as follows:

Production of power.....\$	1,142	\$ 929	\$ 213
Transmission system.....	261	192	69
General plant.....	2,266	2,266	
Totals.....	3,669	3,387	282

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Administrative and General Expenses

for the year ended March 31, 1952

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>
Salaries—executives and officers.....\$	9,034	\$ 7,195	\$ 1,839
Salaries and wages.....	1,436	1,338	98
Employer's contribution to employees' welfare schemes—			
Superannuation Fund, net.....	58	(Cr.) 16	74
Unemployment Insurance.....	63	53	10
Workmen's Compensation	97	83	14
Hospitalization and Medical Services ...	30	28	2
Travel expense.....	6,066	4,736	1,330
Freight and express.....	415	409	6
Stationery and office supplies.....	448	313	135
Telephone and telegraph.....	475	456	19
Postage.....	231	114	117
Advertising.....	28	28	
Miscellaneous.....	872	724	148
Boarding house—excess of food costs over recoveries of \$2,983.....	4,817	4,817	
Totals.....	<u>24,070</u>	<u>20,278</u>	<u>3,792</u>

NOTE: As provided under Section 25 of the Northwest Territories Power Commission Act, the staff of the Comptroller of the Treasury do the Commission's accounting. The costs of these services and the rental value of the premises occupied by the Commission at Ottawa are borne from votes of Parliament provided for the Departments of Finance and Public Works, respectively; in consequence, they are not reflected in the figures shown above.

NORTHWEST TERRITORIES POWER COMMISSION
Statement of Assets and Liabilities according to Location
as at March 31, 1952

ASSETS	TOTAL	SNARE RIVER PLANT	FORT SMITH PLANT	MAYO RIVER PROJECT	HAY RIVER PROJECT
Cash on hand and in bank.....	\$ 435,869	\$ 137,548	\$ 26,131	\$ 268,686	\$3,504
Accounts Receivable.....	122,561	116,576	5,985		
Inventories.....	4,234	1,912		2,322	
Security deposits—					
Cash on hand and in bank.....	49,875		375	49,500	
Securities.....	135,000	50,000		85,000	
Prepaid insurance.....	1,876	1,876			
Fixed assets, as summarized below.....	5,824,502	4,155,630	128,486	1,538,729	1,657
Total Assets.....	6,573,917	4,463,542	160,977	1,944,237	5,161
LIABILITIES					
Accounts payable and accrued charges	110,681	805	170	109,706	
Salaries and wages	6,887	4,693	2,163	31	
Security Deposits, per contra—					
Construction contractors.....	109,500			109,500	
Consumers.....	75,375	50,000	375	25,000	
Total Liabilities.....	302,443	55,498	2,708	244,237	
CAPITAL					
Government of Canada: Advances for Capital					
Account.....	6,264,242	4,430,000*	129,081	1,700,000	5,161**
Surplus					
Opening balance as at April 1, 1951.....	50,517	36,081	14,436		
Net revenue for the year, per Schedule I.....	148,963	129,038	19,925		
Provision for amortization of debt	Cr. 192,248	Cr. 187,075	Cr. 5,173		
Total Capital.....	6,271,474	4,408,044	158,269	1,700,000	5,161
Total Liabilities and Capital.....	6,573,917	4,463,542	160,977	1,944,237	5,161
Summary of Fixed Assets					
Power plants.....	\$2,575,919	\$2,482,120	\$ 93,799	\$	\$
Transmission plant.....	1,396,850	1,396,850			
Distribution plant.....	38,923		38,928		
General plant.....	454,234	453,302	932		
Construction plant.....	195,433	195,433			
Capital works under construction.....	1,540,386			1,538,729	1,657
Total Fixed Assets.....	6,201,750	4,527,705	133,659	1,538,729	1,657
Deduct , charges against income for amortization of debt in lieu of provision for depreciation and obsolescence.....	377,248	372,075	5,173		
Totals.....	5,824,502	4,155,630	128,486	1,538,729	1,657

NOTE: *This includes \$187,075 repayable as at March 31, 1952.

**This is repayable on or before May 1, 1952.

NORTHWEST TERRITORIES

SNARE RIVER

BALANCE SHEET AS

ASSETS

Current:

Cash in Bank Accounts.....	\$	136,926.40	
Advance Outstanding.....		200.00	
Accounts Receivable.....		93,027.07	
Postage and Unemployment			
Insurance Stamps on Hand.....		421.02	
Inventories—Food Supplies,			
Materials and Supplies.....		1,912.16	
Miscellaneous.....		14.59	
Agreement—Sale of Aircraft			
Norseman CF-PAB.....		23,534.71	\$ 256,035.95
<hr/>			
Securities Deposited Under Consumer's			
Guarantee.....			50,000.00
Deferred Charges—			
Prepaid Insurance.....			1,876.33

Fixed:

Production Plant.....	2,482,120.56	
Transmission Plant.....	1,353,054.59	
Interconnecting Transmission Line.....	37,492.40	
General Plant.....	453,301.71	
Construction Plant.....	195,433.27	
Akaitcho Transmission Line.....	6,303.21	
	<hr/>	
	4,527,705.74	
Deduct: Charges against Income for		
Amortization of debt in lieu of provision		
for depreciation and obsolescence.....	372,075.62	4,155,630.12
	<hr/>	
		<u>\$4,463,542.40</u>

Certified Correct,

(Sgd.) A. D. Wymbs,
Accountant.

POWER COMMISSION

POWER PLANT

AT MARCH 31, 1952

LIABILITIES

Current:

Accounts Payable.....	\$	805.07	
Accrued Salaries and Wages.....		4,665.41	
Unclaimed Wages.....		28.00	
Long Term Debt (Matured)			
(Payable March 31, 1952).....		187,075.62	\$ 192,574.10

Customer's Deposits — Power Contract			
Deposits.....			50,000.00

Long Term Debt			
Government of Canada 3 1/8%			
Loan secured by Final			
Certificate of Indebtedness.....			4,242,924.38
			<hr/>
			4,485,498.48

Surplus or Deficit			
Deduct Deficit.....			21,956.08

\$4,463,542.40

Approved:

(Sgd.) J. M. Wardle
Chairman.

NORTHWEST TERRITORIES
FORT SMITH
BALANCE SHEET AS

ASSETS

Current:

Cash in Bank Accounts.....	\$	26,430.57	
Advance Outstanding.....		73.00	
Accounts Receivable.....		5,984.59	
Postage and Unemployment Insurance			
Stamps on Hand.....		2.19	\$ 32,490.35

Fixed:

Production Plant.....	93,798.54
Distribution Plant.....	38,927.71
General Plant.....	932.63
	<hr/>
	133,658.88

Deduct: Charges against Income for		
Amortization of Debt in lieu of provision		
for depreciation and obsolescence	5,172.59	128,486.29
	<hr/>	<hr/>
		\$160,976.64

Certified Correct:

(Sgd.) A. D. Wymbs
Accountant.

POWER COMMISSION

POWER PLANT

AT MARCH 31, 1952

LIABILITIES

Current:

Accounts Payable.....	\$	170.29		
Accrued Salaries and Wages.....		2,162.21	\$	2,332.50

Customer's Deposits — Power Contract				
Deposits.....				375.00

Long Term Debt

Government of Canada 3 1/8%				
Loan Secured by Final Certificate of				
Indebtedness.....				129,081.25

Surplus.....				29,187.89
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\$160,976.64

Approved:

(Sgd.) J. M. Wardle
Chairman.

NORTHWEST TERRITORIES

HAY RIVER

BALANCE SHEET AS

ASSETS

Current:

Cash in Bank Account.....	\$3,504.05
---------------------------	------------

Fixed:

Distribution System

Right of Way.....	\$	191.05
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Poles and Fixtures.....		385.32
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Capital Works Under Construction.....	1,080.50	1,656.87
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		<u>\$5,160.92</u>
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Certified Correct:

(Sgd.) A. D. Wymbs
Accountant.

POWER COMMISSION
POWER PROJECT
AT MARCH 31, 1952

LIABILITIES

Current:

Short Term Debt	
(Department of Finance)	\$5,160.92

\$5,160.92

Approved:

(Sgd.) J. M. Wardle
Chairman.

NORTHWEST TERRITORIES

MAYO RIVER

BALANCE SHEET AS

ASSETS

Current:

Cash in Bank Account.....	\$268,786.26	
Advance Outstanding.....	150.00	
Inventories.....	2,322.00	\$ 271,258.26
<hr/>		
Securities Deposited Under Consumer's		
Guarantee.....		25,000.00
Contractor's Security Deposits.....		109,250.00

Fixed:

Capital Works Under Construction.....	1,538,728.56
---------------------------------------	--------------

\$1,944,236.82

Certified Correct

(Sgd.) A. D. Wymbs

Accountant.

POWER CONSTRUCTION
POWER PROJECT
AT MARCH 31, 1952

LIABILITIES

Current:

Accounts Payable.....	\$109,705.62	
Accrued Salaries and Wages.....	31.20	\$109,736.82
		<hr/>
Contractor Deposits		109,500.00
Customer's Deposits — Power Contract Deposits.....		25,000.00

Long Term Debt

Government of Canada 3 1/8% Loan secured by Interim Certificates of Indebtedness.....		1,700,000.00
		<hr/>
		\$1,944,236.82
		<hr/>

Approved:

(Sgd.) J. M. Wardle
Chairman.

NORTHWEST TERRITORIES POWER COMMISSION

Scale of Miles
5 10 15 20

LEGEND

N.W.T.P.C. Transmission Line T T T T T
C.M.&S.Co. Transmission Line - - - - -

N.W.T.P.C.
SNARE RIVER
POWER PLANT
8350 H.P.

Big Spence
Lake

SNARE

Bousso
River

Simon
Lake

Inglis
Lake

Wheeler
Lake

Seminar
Lake

Fishing
Lake

Glauque
Lake

Duncan
Lake

Amory
Lake

Seag
Lake

RUSSELL

Okla
Lake

Prosperous
Lake

Oregline
falls

C.M.&S.CO.
BLUEFISH
POWER PLANT
4700 H.P.

N.W.T.P.C.
YELLOWKNIFE
TERMINAL

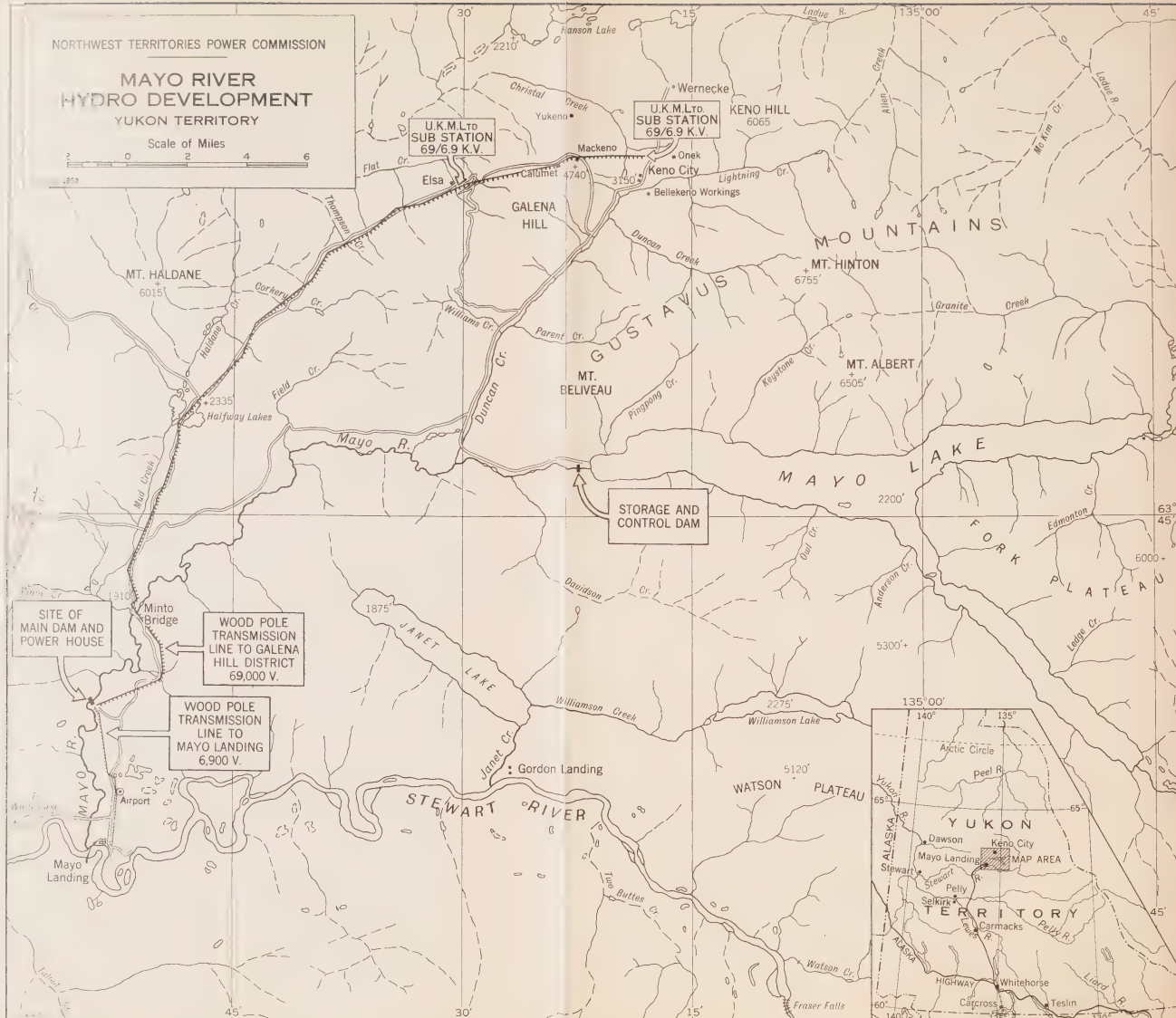
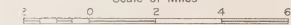
Yellowknife
Bay

GREAT
SLAVE
LAKE

NORTHWEST TERRITORIES POWER COMMISSION

MAYO RIVER HYDRO DEVELOPMENT YUKON TERRITORY

Scale of Miles



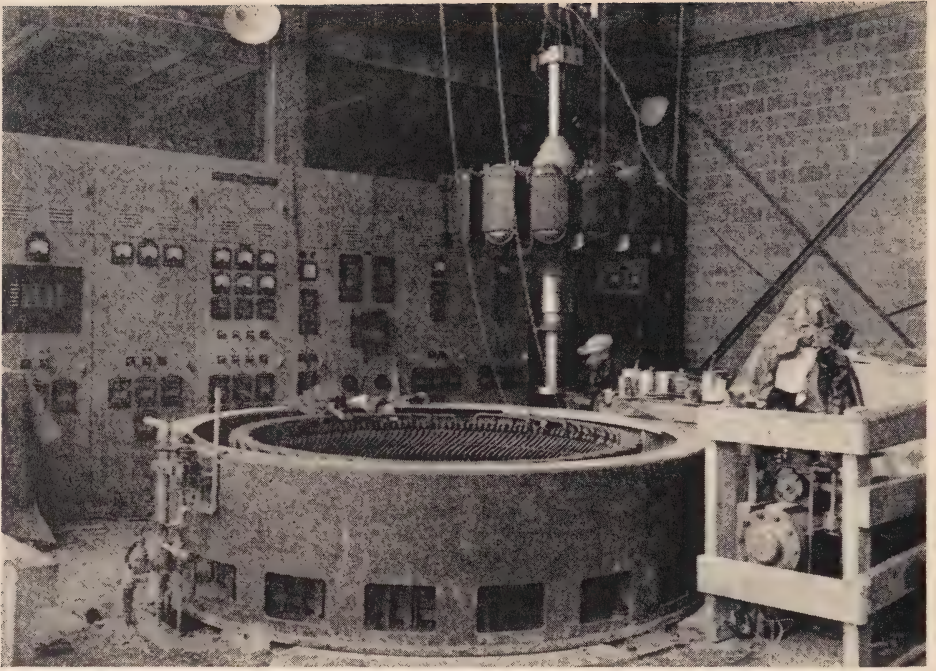
STORAGE AND
CONTROL DAM

SITE OF
MAIN DAM AND
POWER HOUSE

WOOD POLE
TRANSMISSION
LINE TO GALENA
HILL DISTRICT
69,000 V.

WOOD POLE
TRANSMISSION
LINE TO
MAYO LANDING
6,900 V.





Section of Generator — Mayo River Hydro-Electric Plant, Yukon Territory



Storage dam at Mayo Lake, Yukon Territory for Mayo Hydro-Electric Plant

Northwest Territories Power Commission

June 30, 1953

The Honourable Robert H. Winters, M.P., P.C.,
Minister of Resources and Development,
Ottawa, Ontario.

Dear Sir:—

I beg to submit herewith the report of the Northwest Territories Power Commission for the fiscal year ending March 31st, 1953, as required under Clause 26 of the Northwest Territories Power Commission Act, Chapter 64, 11-12 George VI, Revised Statutes.

Respectfully submitted,

H. A. YOUNG,
Chairman.

**ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
MARCH 31, 1953
OTTAWA, CANADA**

The Northwest Territories Power Commission was created by an Act of Parliament in 1948 for the purpose of constructing and operating electric power plants to supply power to mines and other users in the Northwest Territories as the need arose. The Act was amended in March, 1950, to include the Yukon Territory. The Act provides that power plants will be self-sustaining, and consequently the rates charged for power must provide sufficient revenue to cover interest on investment, payments on principal, operating and maintenance expenses and the setting up of a contingency reserve.

The Commission is a Federal Government agency concerned with the construction and management of electric power plants on a commercial basis. Over the past five years its operations have resulted in the establishment of an 8,350 horsepower hydro-electric development on the Snare River, some 90 miles northwest of Yellowknife, which supplies power to the Yellowknife mining area and townsite; a 520 horsepower diesel generating plant supplying Fort Smith, N.W.T., and environs; and a hydro-electric plant in the Yukon Territory located at a point on the Mayo River approximately five miles north of the confluence with the Stewart River. This latter plant has an initial installed capacity of 3,000 horsepower, and is supplying power to the Galena and Keno Hill Mining area and to the settlement of Mayo Landing.

Regular meetings of the Commission were held during the year. In May 1952 Mr. J. M. Wardle resigned as Chairman, upon retirement from the public service, and was replaced by Major General H. A. Young, Deputy Minister of the Department of Resources and Development.

Mr. Norman Marr, Director of the Engineering and Water Resources Branch, Department of Resources and Development, and Mr. George E. Lowe, Executive Assistant to the Deputy Minister of Finance, were appointed members of the Commission in May and October, 1952, respectively.

SNARE RIVER POWER PLANT

The only major operating difficulty experienced by the Snare River System occurred in November 1952 when extremely heavy icing and sleeting conditions lasted for several days. Insulator flashovers due to heavy wet snow, and phase to phase shorts caused by the heavy ice and frost loading on the conductors caused eight brief interruptions in service between November 15th and 29th. The telephone line between Yellowknife and the power plant sustained considerable damage in the form of broken and crossed conductors. For several weeks, until the telephone line was restored to service, emergency communication was maintained via radio contact with the Royal Canadian Corps of Signals' station in Yellowknife supplemented by a temporary installation of power line carrier equipment at the Snare River Power Plant. The latter provided fair communication with the Yellowknife terminal station and the Consolidated Mining and Smelting Company Limited's power plant at Bluefish Lake.

Routine maintenance and inspection of the generating equipment, switch-gear and turbine was carried out on July 1st, requiring a shutdown of approximately 15 hours.

During the winter of 1952-53 some settlement occurred in a small holding dam located near the spillway structure. This is not considered to be a serious matter. Repairs are to be carried out in the summer of 1953.

Water supply over the twelve month period ended March 31st, 1953, was more than adequate. The water level reached a low of 721.6' in May, increased to a summer peak of 726.75' in July, when stop logs were removed from the spillway structure. The level remained steady through the summer and early fall and a peak of 726.9' was reached on December 6th, 1952. At the end of March the level stood at 725.3'. Normal full supply level is considered to be elevation 725.0'.

Arrangements for the delivery of power to the Consolidated Discovery Yellowknife Mines Limited property at Giaque Lake, some 52 air miles northeast of Yellowknife, were made and will result in an appreciable increase in primary load for the Snare River Plant. These arrangements necessitated negotiation of an agreement with the Consolidated Mining and Smelting Company Limited whereby power from the Snare plant will be transmitted over that company's transmission line between the point of inter-connection with the Commission's system near Yellowknife and

the company's power plant at Bluefish Lake. Power so transmitted will be delivered to the Discovery Mine and may be delivered to any other customers of the Commission that can be served from a transmission line extending between the Bluefish Lake plant and the Discovery Mine. Metering and switching equipment will be provided by the Commission at the Bluefish power plant.

By virtue of the secondary power load connected to the Snare River system the generating capacity was almost entirely asorbed on several occasions during the winter of 1952-53. However, the primary load is still far short of capacity. The peak load for the year was 6,700 KW, on December 19th. Kilowatt hours generated during the year totalled 35,256,850, an increase of $7\frac{1}{2}\%$ over the previous year. The sale of primary power increased by 29% to a total of over 18,352,000 KWHrs. The closing down of the Negus Gold Mines Limited near Yellowknife was reflected by a decrease of over 10% in secondary power sales since loss of the Negus Mine load released power from Consolidated Mining and Smelting Company Limited's Bluefish Lake Plant for that company's own consumption.

Surplus Commission construction equipment at Yellowknife was advertised for sale. Total sales of surplus equipment throughout the year totalled \$10,568.00, and were credited to the capital account.

FORT SMITH PLANT

The Commission's diesel plant at Fort Smith experienced a satisfactory year. The number of customers increased slightly and kilowatt hours generated increased by 10%, as compared with the previous year, to a total of 559,688 Kilowatt hours. Power is supplied to approximately fifty Federal Government connections and to some ninety private domestic and commercial connections.

Only one complete power failure occurred during the year in December 1952 and this was of 25 minutes duration.

MAYO RIVER POWER PLANT

Description of the Plant

The Mayo plant is located at a pronounced bend in Mayo River some five miles north of the settlement of Mayo Landing, and about one mile in from the highway that connects the settlement

with the mining districts to the north and east. The site selected has the advantage of narrow canyon-like walls providing a suitable site for a dam, with construction materials available close by, and some twenty-seven feet of natural head was available, by tunnelling across the bend.

The major components of the development consist of: an earth-fill dam 385' long by 109' high, containing approximately 326,000 cubic yards of material; a spillway structure adjacent to the dam; a concrete-lined tunnel approximately 7' x 8' in section and 1,655' long, extending from a point a short distance above the dam, across the bend in the river and emerging at a point some 2,500' downstream from the dam; a power house structure of steel frame and concrete block construction situated at the lower end of the tunnel; a low rock-filled crib overflow type dam at the outlet of Mayo Lake, providing storage of water on that lake; and slightly less than 32 miles of 69,000 volt transmission line.

The generating plant consists of a 3,000 HP, vertical Francis type turbine, operating under a maximum net head of 118', connected to a 3,000 KVA, 6,900 volt, 3 phase, 60 cycle generator. The turbine scroll case is connected to the penstock by a hydraulically operated butterfly valve. The plant is equipped with a standard hydraulic governor and the usual relays and protective devices as well as alarm and automatic shutdown equipment to permit operation on a partially unattended basis. The switchgear, of totally enclosed cubicle pattern, is located in a bay of the powerhouse structure cantilevered over the tailrace. A 75 KVA diesel-electric generating set is located in the basement of the powerhouse to supply emergency standby power.

Provision was made for a second generating unit by forming a T connection to the number one penstock, the number two penstock being carried out to the rock face in line with the back wall of the powerhouse and sealed off with a steel bulkhead. The substructure and draft tube concrete work for the second unit adjacent to the original powerhouse structure was constructed so that a future second unit could be installed with a minimum amount of heavy construction work and shutdown time. The east wall of the powerhouse is of temporary construction consisting of corrugated transite asbestos board attached to the steel frame; the uncompleted extension for the number two unit is covered with a lumber housing.

The construction of the main dam in the Mayo River created a headpond having an area of over 1,000 acres and extending some

six miles up the river to Minto Bridge. However, in order to provide adequate water storage it was necessary to construct a low dam, 350' long, at a point approximately one mile below the outlet of Mayo Lake. By raising the normal lake level 10' this dam has created over 250,000 acre feet of storage; a quantity of water sufficient to operate the installation at full load for more than a year. This dam is equipped with two sluice ways fitted with stop-logs and is of the overflow type with a spillway section 172 feet in length. This structure is located 30 miles from the main plant site and 7 miles from the main highway to Keno City.

The spillway, having a capacity of 15,000 cubic feet per second and equipped with two steel gates 17' wide by 25' high, is situated adjacent to the main dam. Each gate has its own drum-type hoisting mechanism housed in a small structure at either side of the spillway. The gates and guides are fitted with electric heaters. Due to the distance between the spillway and the powerhouse one of the gates is equipped with a remote gate opening indicator and a remote hoist operating station, both located in the powerhouse.

The tunnel intake consists of a reinforced concrete structure erected at the upper end of the tunnel and is topped by a small gatehouse housing the forebay level indicator and a manually operated hoist for raising and lowering the headgate.

A steel surge tank was erected near the downstream end of the tunnel equipped with electric heaters and thermometer and sheathed with two layers of 1" lumber, to prevent freezing in the winter months.

A step-up substation containing 2, 1,500 KVA, 6,900/69,000 volt, three-phase, transformers is located on the rim of the canyon above the power plant. From this point the 69,000 volt transmission line, carried on wooden pole structures of the crossarm and pole top pin type, follows the highway between Mayo and the United Keno Hill Mines Limited property at Elsa on Galena Hill. The line then traverses Galena Hill, passes near United Keno Hill Mines Limited's Calumet Mine near the top of the hill, and terminates at United Keno Hill Mines Limited's substation located on the west side of Keno Hill near the settlement of Keno City. Arrangements were made with the United Keno Hill Mines Limited to allow that company to install, at their own expense, 6,900 volt transmission line conductors on the transmission line between the Company's Elsa and Calumet camps.

A tap is taken from the 6,900 volt bus on the main step-up substation at the power plant site to supply power to the plant area through small substations located adjacent to the spillway, the surge tank, and the staff-quarters and garage buildings.

A 6,900 volt transmission line extends from the plant southward towards the settlement of Mayo, connecting with the Royal Canadian Corps of Signals' existing transmission line at its transmitter site some two miles south of the plant. A 6,900/2,300 volt step-down substation was erected about two miles north of Mayo in order to utilize an existing stretch of underground cable construction required to clear the airport runway. This transmission line terminates in the settlement of Mayo at two separate substations. One substation supplies the Royal Canadian Corps of Signals' radio receiving station and staff living quarters and the second, which is owned by the Mayo Light and Power Company Limited, supplies the settlement of Mayo.

A telephone line is installed on the 6,900 volt transmission line as far as the Royal Canadian Corps of Signals' transmitter station where the telephone circuit into Mayo is completed via a pair of conductors in the Signals' communication cable carried on the transmission line. Connection is made to the local telephone company's system near the Royal Canadian Corps of Signals' receiving station.

Staff accommodation provided consists of a one-storey frame building containing two two-bedroom apartments, two one-room apartments and a common laundry room. Near the staff quarters a combined office, garage and stores building has been erected. These buildings are heated by an electric boiler installed in the garage. A small building adjacent to the river and below the staff quarters contains the domestic water pump and high pressure fire pump; the latter is controlled by a remote starting button located near the staff quarters building. A buried pipeline, protected against freezing by a thermostatically controlled heating cable, connects the pump with the water pressure tank. A short insulated pipe box containing steam and water lines extends from the garage structure to the staff quarters building.

Construction Costs

Although final construction costs were not available as of March 31st it is estimated that Mayo Plant will cost about \$4,150,000.00. This amount is substantially more than the original estimate due chiefly to the following:

Difficulties were encountered with the foundation of the storage dam at Mayo Lake as a result of permafrost conditions. The lack of a local supply of rock for filling the cribs necessitated a lengthy haul from the Keno City area. The foundation difficulties delayed the progress on the dam, consequently, the 1951 season's program had to be carried out under severe winter conditions with attendant high cost.

The removal of fractured rock at the main dam site necessitated additional excavation to reach a sound rock foundation and in turn increased the amount of material that had to be placed in the dam. These conditions also resulted in an appreciable increase in the excavation quantities for the spillway and an increased amount of concrete for the spillway structure.

The cost of the tunnel was increased due to a fault zone near the lower end, necessitating relocation of the powerhouse and lengthening of the tunnel. Poor rock conditions made it necessary to line the tunnel throughout its entire length and more close timbering than originally estimated was required for support during excavation operations.

It was decided to extend the transmission line to Keno City rather than terminate it on Galena Hill. This added 23% to the transmission line mileage and increased the cost proportionately.

Contracts for the supply of all major equipment contained price escalation clauses. The general rise in material prices and labour rates between the dates of placing orders and deliveries as covered by the escalator clauses resulted in considerable additional expense.

The general rise in material and labour costs was also reflected in the cost of constructing the transmission line and in special work performed at cost plus percentage fee basis.

The decision to do certain work towards the installation of a second unit also involved additional expense.

General

The Mayo River Hydro Electric Development was completed and generation of power commenced in November 1952. Up to March 31, 1953 the United Keno Hill Mines Limited was the only mining company taking power and its requirements were confined to the Elsa and Calumet camps on Galena Hill.

In December 1952 arrangements were made for delivery of power to the Royal Canadian Corps of Signals' radio station at Mayo and to the Mayo Light and Power Company Limited for distribution at Mayo Landing.

Rates of 2-7/8c. per KWHr for power supplied to mining companies at transmission line voltage, and 5c. per KWHr for power sold to the Royal Canadian Corps of Signals and the Mayo Light and Power Company, were determined; the higher rate for the latter two customers is consequent upon the small amount of power involved and related transmission costs.

The Commission originally decided to construct an extension to the powerhouse to accommodate a second generating unit. This decision was predicated on increased mining activity in the area which gave every indication that a second unit would be required by the end of 1953. Due to the decrease in world prices of base metals that occurred in the summer of 1952 this additional demand failed to materialize and, consequently, plans for a second unit were carried out only to the extent of building the extension to the powerhouse substructure.

In April negotiations were completed with the Ace Construction Company Limited of Calgary, Alberta, for the construction of the transmission lines. The Company experienced some delay due to road bans being placed on the Alberta and Alaska highways while the construction equipment was enroute but work got underway in late May.

Unusually mild weather experienced in late fall enabled the various contractors to complete the work before the onset of severe winter conditions.

GENERAL MISCELLANEOUS INVESTIGATIONS

A report on water power sites in the immediate district of Whitehorse ranging from five to ten thousand horsepower was received from the Water Resources Division of the Engineering and Water Resources Branch, Department of Resources and Development. This report indicated that although there are some sites with interesting possibilities, no first-class site is available sufficiently close to Whitehorse where a hydro electric development of sufficient capacity to supply the entire Whitehorse area could be constructed at a cost that would permit the plant to be operated on a self-sustaining basis and yet supply power at rates appreci-

ably below the cost of diesel generated power. This problem is aggravated by the fact that the known load in the Whitehorse district is of relatively low annual load factor. The Commission decided to defer further investigations pending the outcome of current plans of a commercial organization, which may affect the power situation in the Whitehorse district.

The arrangement for the Commission's field engineer to take periodic stream flow measurements on the Emile River, the Snare River (at Lake Wijinnedi) and the Lockhart River, for the Water Resources Division, Department of Resources and Development, was continued.

Maps showing the Mayo River and Snare River Hydro Electric Developments and associated mining areas to which power is being supplied are included in this report.

FINANCIAL

Funds are advanced by the Minister of Finance for the construction of individual plants and each plant is operated on a self-sustaining basis. Loans based on the advances are amortized over different periods and the annual earnings of the various plants are not transferable. The rates charged for power sold are established in accordance with Section 12 of the Act.

The fiscal year has been established as the twelve month period ending on the 31st of March.

Snare River Power Plant

The Capital Loan for this plant is repayable over the 20 year period ending March 31st, 1969. The interest rate is $3\frac{1}{8}\%$ per annum.

The fourth annual debt retirement instalment amounting to \$325,513.13 was paid to the Minister of Finance as of March 31st, 1953. Of this sum, \$192,921.74 was principal and \$132,591.39 interest. Revenue and miscellaneous income fell short by \$43,430.60 of meeting all charges but \$82,000.00 realized from the sale of construction equipment to the public and the Mayo Plant was credited to Capital Account. In accordance with Section 22(3) of the Act, the necessary funds were borrowed from this account to meet the annual instalment payment.

The circumstances outlined prevented the setting up of a Contingency Reserve Fund for this plant.

Fort Smith Power Plant

The Capital Loan for this plant is repayable over the 20 year period ending March 31st, 1971. The interest rate is $3\frac{1}{8}\%$ per annum.

The second annual debt retirement instalment amounting to \$9,111.68 was paid to the Minister of Finance as of March 31st, 1953. Of this sum, \$5,077.89 was principal and \$4,033.79 interest. During the year the Capital Loan was increased by \$7,000.00 covering funds advanced to meet the cost of a truck, garage building, consumers' meters and distribution system extensions. The interest on this advance from August 12th, 1952, to March 31st, 1953, amounting to \$139.04 was also paid to the Minister of Finance as of the latter date but repayment of principal and subsequent interest will be included with the annual repayments commencing on March 31st, 1954.

In accordance with Section 12(c) of the Act the sum of \$30,000.00 has been set aside as a Contingency Reserve Fund for this Plant.

Mayo River Power Plant

Construction being completed, this plant went into operation in November 1952 but final cost had not been established as at March 31st, 1953.

Capital Advances totalled \$4,193,000.00 at the above date and these, plus interest at $3\frac{1}{8}\%$ per annum during the construction period and in the period November, 1952, to March 31st, 1953, brought to \$4,306,217.97 the total sum repayable to the Minister of Finance.

Final construction costs are estimated at \$4,150,000.00 which together with the interest during the construction period and to March 31st, 1953, will be amortized over the 20 year period commencing April 1st, 1953. The annual interest rate for the amortization period will also be $3\frac{1}{8}\%$. The difference between capital advances and the final construction cost established as at March 31st, 1953, will be repaid to the Minister of Finance.

During the $4\frac{1}{2}$ months of operation in 1952-1953 the only charges against revenue were for direct operation and maintenance expenses and depreciation. This resulted in an operating surplus for the period of \$28,398.57 of which amount \$22,233.99 was set aside to establish a Contingency Reserve Fund in accordance with Section 12(c) of the Act.

Corporation Income Tax

Reasonable depreciation taken on plants, equipment and buildings exceeded net earnings and the Commission was, therefore, not liable for payment of this tax for the fiscal year under review.

General

Included in this report is the Consolidated Balance Sheet of the Commission as at March 31st, 1953, certified by the Auditor General of Canada, which reflects the financial standing of the Snare River, Fort Smith and Mayo River Plants. In addition to the Consolidated Balance Sheet the following statements are appended:

Schedule 1 — Statement of Income and Expenses

Schedule II — Statement of Operating Expenses

Schedule III — Statement of Maintenance Expenses

Schedule IV — Statement of Administration and General Expenses

Schedule V — Statement of Assets and Liabilities according to Location

The Comptroller of the Treasury, Department of Finance, supplied all accounting and financial services to the Commission.

Ottawa, June 30, 1953.

The Chairman,

Northwest Territories Power Commission,
Ottawa, Ontario.

Dear Sir:

The accounts of the Northwest Territories Power Commission having been audited under my direction for the fiscal year ended March 31, 1953, I forward herewith a copy of my report which has been made to the Minister of Resources and Development, in accordance with Section 87 of the Financial Administration Act, together with the Balance Sheet as at the date of closing and the following supporting schedules:

Schedule

- I Statement of Income and Expense
- II Statement of Operating Expenses
- III Statement of Maintenance Expenses
- IV Statement of Administrative and General Expenses
- V Statement of Assets and Liabilities according to Location.

Yours faithfully,

(Sgd.) J. HOPKINSON,
Assistant Auditor General of Canada.

Ottawa, June 30, 1953.

The Honourable R. H. Winters,
Minister of Resources and Development,
Ottawa.

Dear Sir:

Re: Northwest Territories Power Commission

Having completed the audit of the accounts of the above-noted Commission for the fiscal year ended March 31, 1953, I now report to you, in compliance with the requirements of Section 87 of the Financial Administration Act, the results of the examination both of the accounts, and of the Certified Financial Statement forwarded herewith.

Evidence was not produced during the audit in the form of stock-taking inventory sheets or otherwise, affirming the existence intact of the components of the moveable assets, including construction and transportation equipment, operating tools, furniture and boarding house equipment. The Commission has, however, undertaken to verify these items during the fiscal year 1953-54.

The accumulated allowances for depreciation for the various plants, not having been calculated according to engineering standards, may not be regarded as indicative of the actual depreciation. In the cases of the Snare River and Fort Smith Plants the allowances are based on the amounts of the constructional advances, falling due for payment, annually. In the case of the Mayo River Plant, for which no principal repayments have yet fallen due, the allowance is approximately 5%, per annum, of the capital cost of the plant for the period during which it was in operation (November 11, 1952 to March 31, 1953).

Subject to the foregoing, I certify that, in my opinion,

1. proper books of account have been kept by the Commission;
2. the Financial Statement has been prepared on a basis consistent with that of the preceding year and is in agreement with the books of account; also, the Balance Sheet

and the accompanying Statement of Income and Expense, respectively, give a true and fair view of the state of the Commission's affairs as at March 31, 1953, and of the results of the Commission's operations for the fiscal year;

3. the transactions of the Commission that have come under my notice have been within the Commission's powers as set forth in the Northwest Territories Power Commission Act and in the Financial Administration Act.

Yours faithfully,

Original Signed by

(Sgd.) J. HOPKINSON,
Assistant Auditor General.

NORTHWEST TERRITORIES

(Established under the Northwest

BALANCE SHEET AS

ASSETS

Cash on Hand and in Bank.....	\$	517,744	
Accounts Receivable.....		233,822	
Inventories—Food, returnable containers and spare parts, as certified by the Management, at cost.....			7,655
Security Deposits—per contra:			
Cash on hand and in bank.....	\$	450	
Securities.....		75,000	
			75,450
Prepaid Insurance.....			4,987

Fixed Assets:

Power plants, distribution systems, general plant, construction plant, and capital works under construction, at cost.....	8,824,501
---	-----------

Deduct:

Accumulated allowance for depreciation and obsolescence.....	653,014	
		8,171,487
		<u>9,011,145</u>

Note: For details of assets and liabilities, according to locations,
see Schedule V-I.

Certified Correct

(Sgd.) F. H. Collins
Accountant.

(Sgd.) Norman Marr
for Chairman.

POWER COMMISSION

Territories Power Commission Act)

AT MARCH 31, 1953

LIABILITIES AND CAPITAL

Liabilities

Accounts Payable and Accrued Charges.....	\$ 245,498	
Salaries and Wages.....	3,277	
Security Deposits—per contra:		
Consumers.....	75,450	
		\$ 324,225

Capital

Government of Canada:		
Advances received on Capital Account, under authority of s.17(1) of the Act—repayable within 20 years with interest at 3 1/8% p.a. (including \$192,922 repayable as at March 31, 1953).....	8,680,146	
Reserved for Contingencies.....	52,234	
	8,732,380	
Deduct, Deficit, per Schedule V-2.....	45,460	
		8,686,920
		<u>9,011,145</u>

Signed for purposes of identification only and subject to my Report, copy herewith, to the Minister of Resources and Development.

(Sgd.) J. Hopkinson,
Assistant Auditor General of Canada.

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Income and Expense
for the year ended March 31, 1953

Income	TOTAL	SNARE RIVER PLANT	FORT SMITH PLANT	MAYO RIVER PLANT
Sales of power—				
Mines	\$432,819	\$318,847		\$113,972
Commercial	51,676	37,768	\$ 13,908	
Sales of Lighting—				
Commercial	33,692		30,459	3,233
Domestic	13,094		13,094	
Municipal	360		360	
Connection charges	203		203	
Rents—living quarters	1,951	1,598		353
Interest	116	116		
Total Income	533,911	358,329	58,024	117,558
Expense				
Operating, per Schedule II	84,162	51,407	25,750	7,005
Maintenance, per Schedule III ...	5,571	3,872	1,537	162
Administrative and general, per Schedule IV	29,938	20,968	4,744	4,226
Interest	136,764	132,591	4,173	
Cash discounts on power and light Accounts	2,168		2,168	
Total Expense	258,603	208,838	38,372	11,393
Net Income for the year, before pro- viding for depreciation and obsolescence	275,308	149,491	19,652	106,165
Deduct, Allowance for depreciation and obsolescence of fixed assets .	275,766	192,922	5,078	77,766
Surplus (Deficit) for the year, per Balance Sheet	—458	—43,431	14,574	28,399

Note: The Mayo River Plant, which was completed during the year, commenced operations on November 11, 1952.

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Operating Expenses
for the year ended March 31, 1953

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>	<u>MAYO RIVER PLANT</u>
Salaries and Wages	\$ 56,338	\$ 37,791	\$ 12,167	\$ 6,380
Employer's contributions to employees' welfare schemes	48	599	—624	73
Diesel oil	13,278		13,278	
Charter of aircraft	11,983	11,983		
Tractors, snowmobile, boat, etc.	797	376	212	209
Lubricating oil	905		641	264
Supplies	598	505	41	52
Miscellaneous	215	153	35	27
Totals	84,162	51,407	25,750	7,005

Distributed as follows:

Production of power	\$ 63,633	\$ 31,350	\$ 25,750	\$ 6,533
Transmission system	7,697	7,697		
General plant	12,832	12,360		472
Totals	84,162	51,407	25,750	7,005

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Maintenance Expenses

for the year ended March 31, 1953

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>	<u>MAYO RIVER PLANT</u>
Insurance	\$ 1,710	\$ 714	\$ 982	\$ 14
Furniture and fixtures.....	551	523	16	12
Communication systems	583	583		
Reservoirs, dams and waterways	716	713		3
Structures and improvements.....	772	527	245	
Equipment, generally	708	434	249	25
Miscellaneous	531	378	45	108
Totals	5,571	3,872	1,537	162

Distributed as follows:

Production of power	\$ 2,630	\$ 1,194	\$ 1,422	\$ 14
Transmission systems	245	120	115	10
General plant	2,696	2,558		138
Totals	5,571	3,872	1,537	162

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Administrative and General Expenses

for the year ended March 31, 1953

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>	<u>MAYO RIVER PLANT</u>
Salaries—executives and officers . . .	\$ 12,361	\$ 8,861	\$ 2,052	\$ 1,448
Salaries and Wages	1,845	1,304	270	271
Employer's contributions to employees' welfare schemes	219	149	9	61
Travel expense	6,497	2,947	1,583	1,967
Freight and express	504	491	12	1
Stationery and office supplies	942	411	358	173
Telephone and Telegraph	833	566	77	190
Postage	267	126	110	31
Advertising	211	113	49	49
Miscellaneous	1,210	951	224	35
Boarding house, being the excess of food costs over recoveries of \$4,006	5,049	5,049		
Totals	29,938	20,968	4,744	4,226

NOTE: As provided under Section 25 of the Northwest Territories Power Commission Act, the staff of the Comptroller of the Treasury do the Commission's accounting. The costs of these services and the rental value of the premises occupied by the Commission at Ottawa are borne from votes of Parliament provided for the Departments of Finance and Public Works, respectively; in consequence, they are not reflected in the figures shown above.

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Assets and Liabilities according to Location as at March 31, 1953

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>	<u>MAYO RIVER PLANT</u>
ASSETS				
Cash on hand and in bank . \$	517,744	\$ 117,394	35,833	\$ 364,517
Accounts receivable	233,822	106,534	7,397	119,891
Inventories	7,656	1,781		5,875
Security deposits—				
Cash on hand and in bank	450		450	
Securities	75,000	50,000		25,000
Prepaid insurance	4,986	1,242	2,171	1,573
Fixed assets, per Schedule V-2	8,171,487	3,960,532	129,722	4,081,233
Total Assets	9,011,145	4,237,483	175,573	4,598,089
LIABILITIES				
Accounts payable and accrued charges \$	245,498	\$ 6,961	\$ 102	\$ 238,435
Salaries and wages	3,277	2,984	256	37
Security deposits, per contra—				
Consumers	75,450	50,000	450	25,000
Total Liabilities	324,225	59,945	808	263,472
CAPITAL				
Government of Canada Advances, received on capital account	8,680,146	4,242,925*	131,003	4,306,218
Reserved for contingencies	52,234		30,000	22,234
Deficit (Surplus) as at March 31, 1953, per Schedule V-2	—45,460	—65,387	13,762	6,165
Total Capital	8,686,920	4,177,538	174,765	4,334,617
Total Liabilities and Capital	9,011,145	4,237,483	175,573	4,598,089

NOTES: *\$192,922 of this was due for repayment on March 31, 1953.

Fixed assets held re the Hay River Project as at April 1, 1952 were disposed of during the year and the capital advance was repaid to the Government.

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Assets and Liabilities according to Location (concluded)
as at March 31, 1953

Summary of Fixed Assets

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>	<u>MAYO RIVER PLANT</u>
Power plants	\$4,805,289	\$2,481,579	\$ 93,564	\$2,230,146
Transmission plant	1,555,081	1,403,383		151,698
Distribution plant	39,806		39,806	
General plant	670,623	455,482	6,602	208,539
Construction plant	308,546	185,086		123,460
Capital works under construction	1,445,156			1,445,156
Total Fixed Assets	8,824,501	4,525,530	139,972	4,158,999
Deduct: Accumulated allow- ances for depreciation and obsolescence	653,014	564,998	10,250	77,766
Total transferred to Schedule V-1	8,171,487	3,960,532	129,722	4,081,233

Deficit (Surplus) Account

Deficit (Surplus) as at April 1, 1952	\$ 7,232	\$—21,956	\$ 29,188	
Deficit (Surplus) for the year, per Schedule 1	—458	—43,431	14,574	28,399
Transfer to Contingency Reserve.	—52,234		—30,000	—22,234
Deficit (Surplus) as at March 31, 1953 transferred to Balance Sheet	—45,460	—65,387	13,762	6,165

NORTHWEST TERRITORIES POWER COMMISSION

Scale of Miles

5 10 15 20

LEGEND

N.W.T.P.C. Transmission Line T T T T T
C.M. & S.Co. Transmission Line - - - - -

N.W.T.P.C.
SNARE RIVER
POWER PLANT
8350 H.P.

Big Spout
Lake

SNARE

Bousso
River

Germane
Lake

Wheeler
Lake

Fishing
Lake

Graigue
Lake

Duncan
Lake

YELLOWKNIFE RIVER

Inglis
Lake

Bois
Lake

Sagag
Lake

RUSSELL

Orke
Lake

N.W.T.P.C.
YELLOWKNIFE
TERMINAL

Yellowknife

C.M. & S. CO.
BLUEFISH
POWER PLANT
4700 H.P.

Gregoire
Falls

Prosperous

GREAT SLAVE LAKE

Wabkin Bay

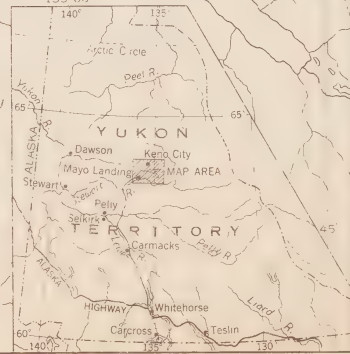
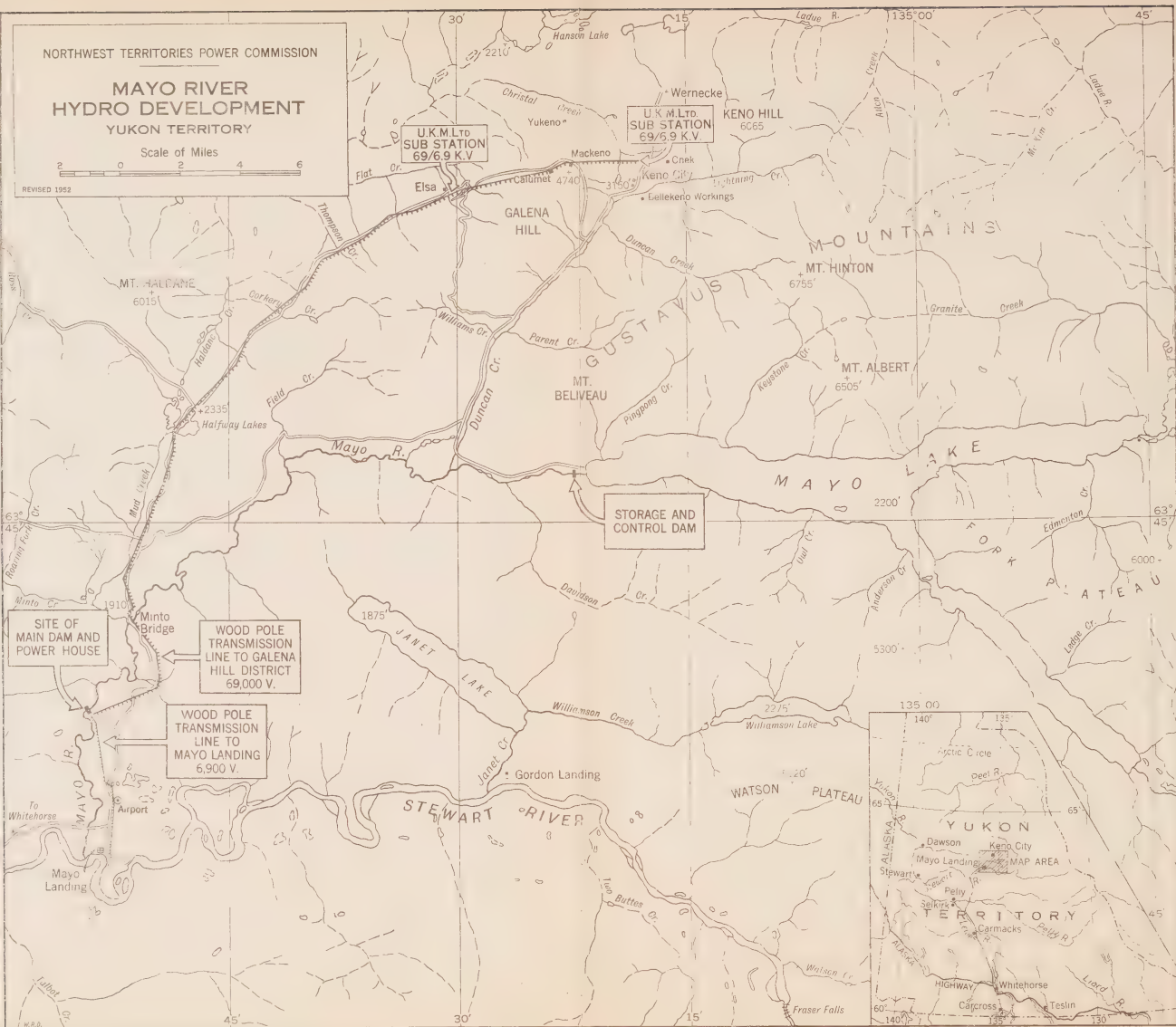
NORTHWEST TERRITORIES POWER COMMISSION

MAYO RIVER HYDRO DEVELOPMENT YUKON TERRITORY

Scale of Miles

2 0 2 4 6

REVISED 1952



A1
CΦ
A56

Government
Publications

GOVERNMENT OF CANADA

Northwest Territories Power Commission

ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1954



OTTAWA, CANADA

GOVERNMENT OF CANADA

Northwest Territories Power Commission

ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1954

OTTAWA, CANADA

Northwest Territories Power Commission

June 30, 1954

The Honourable Jean Lesage, M.P., P.C.,
Minister of Northern Affairs and National Resources,
Ottawa, Ontario.

Dear Sir:—

I beg to submit herewith the report of the Northwest Territories Power Commission for the fiscal year ending March 31st, 1954, as required under Section 24 of the Northwest Territories Power Commission Act, Chapter 196, R.S.C. 1952.

Respectfully submitted,

R. G. ROBERTSON,
Chairman.

NORTHWEST TERRITORIES POWER COMMISSION

1953 - 1954

R. G. ROBERTSON *Chairman*

G. E. LOWE *Member*

N. MARR* *Member*

E. W. HUMPHRYS *Chief Engineer*

F. H. COLLINS *Accountant*

J. I. NICOL *Acting Secretary*

*Deceased April 1954.

**ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
MARCH 31, 1954
OTTAWA, CANADA**

The Northwest Territories Power Commission was created by an Act of Parliament in 1948 (amended in 1950) and is empowered to construct and operate electric power plants in the Northwest Territories and Yukon Territory. The Act requires that such projects shall be self-sustaining, and consequently the rates charged for power must provide sufficient revenue to cover interest on investment, repayment of principal over a period of years, operating and maintenance expenses and the setting up of a contingency reserve. The Commission is thus a Federal Government agency concerned with the construction and management of electric power plants on a commercial basis.

Over the past six years its operations have resulted in the establishment of an 8,350 horsepower hydro-electric development on the Snare River, some 90 miles northwest of Yellowknife, which supplies power to the Yellowknife mining area and townsite; a 520 horsepower diesel generating plant and distribution system supplying the settlement of Fort Smith, N.W.T., and environs; and a 3,000 horsepower hydro-electric plant in the Yukon Territory located on the Mayo River approximately five miles north of the settlement of Mayo Landing.

In November 1953, Major General H. A. Young, Deputy Minister of the Department of Resources and Development, resigned as Chairman, consequent upon being appointed Deputy Minister of the Department of Public Works and was succeeded by Mr. R. G. Robertson, Deputy Minister of the Department of Northern Affairs and National Resources.

It is with deep regret that the Commission records the death in April 1954 of Mr. Norman Marr, Member of the Commission since May 1952. Through his extensive knowledge of all types of power development and sound judgment Mr. Marr contributed much to the affairs of the Commission. He played an active part in the planning and construction of the Commission's Snare River development and was closely associated with the Commission as an adviser prior to being appointed a Member of the Commission. In his passing the Commission has suffered a serious loss which will be felt by all who were associated with him.

SNARE RIVER POWER PLANT

Kilowatt hours generated during the year totalled 35,985,900 representing an increase of approximately 2% over the previous year. The sale of primary power increased by over 29% to a total of over 23,762,700 Kilowatt hours, but there was a decrease of approximately 42% in the sale of secondary power for production of steam. The net result was an increase in total revenue of approximately 18% as compared with the previous year. During the normal operating periods the total load approached plant capacity on several occasions by virtue of secondary power consumption, but the normal total primary power load did not absorb more than 50% of generating capacity.

Delivery of power to the Consolidated Discovery Yellowknife Mines Ltd. over that company's own 34,500 volt wood pole transmission line (which extends some 42 miles north easterly from Consolidated Mining and Smelting Company Limited's Bluefish Lake Power Plant to the mine property adjacent to Giaouque Lake) commenced on April 17, 1953. The Commission installed an oil circuit breaker and associated equipment and metering facilities at the Bluefish Lake power plant substation, through which the Discovery transmission line is supplied. Total cost of the installations provided by the Commission and modification of the Bluefish substation to accommodate same was approximately \$17,490. which was met from capital funds on hand to the credit of the Snare River plant.

The delivery of power to the Discovery mine was made possible by virtue of the existing interconnection between the Commission's Yellowknife Terminal Station and the Consolidated Mining and Smelting Company Limited's transmission line, near Yellowknife. The Commission entered into an agreement with the Consolidated Mining and Smelting Company Limited, whereby the latter company agreed to transmit a quantity of power from the point of interconnection to the Bluefish substation for delivery at that point to customers of the Commission.

Power is supplied to the Consolidated Discovery Yellowknife Mines Ltd., at the basic rate for primary power delivered at the Commission's Yellowknife Terminal Station plus a flat monthly charge to cover Consolidated Mining and Smelting Company Limited's charge for transmitting the power and use of associated facilities at the Bluefish power plant and the annual charges in respect to the capital investment incurred by the Commission in connection with the installations made specifically for the delivery of power to the Discovery mine.

The additional load provided by the Discovery mine presently amounts to approximately 500 Horsepower and 200 Horsepower in primary and secondary power respectively.

The only operating difficulty encountered during the year was due to a repetition of heavy icing and sleet conditions in November similar to that experienced in 1952. This condition caused several short transmission line outages and resulted in an extended interruption in telephone communication between the Snare River plant and Yellowknife. Because of unsatisfactory flying conditions telephone communication was not restored until February 1954; emergency communication with Yellowknife was maintained by radio contact with the R.C.C.S. Radio Station.

Due to the difficulties that have been encountered annually in maintaining the existing telephone circuit between the Snare River plant and Yellowknife, it has been decided to install a power line carrier telephone system which will operate on the main transmission line. This equipment is expected to provide more reliable service, particularly during bad weather conditions when communication is most essential from an operating point of view. The existing telephone line will, however, be retained since it is necessary in connection with patrol and maintenance of the transmission line, but the advent of the power line carrier system will permit maintenance of the telephone circuit under less strenuous conditions and at considerably less cost. It is anticipated that the power line carrier system will be in operation in the fall of 1954.

The major maintenance operation carried out during the year was the repair of a retaining dam near the spillway. A portion of this dam had settled several feet and was rebuilt to design elevation with gravel fill. This work was carried out in July by day labour forces under the direction of the Commission staff. A new access road to the Yellowknife terminal station approximately 600 feet in length was constructed by contract.

The annual maintenance shutdown took place on July 1st, 1953, during which the turbine runner was inspected and various maintenance operations that can not be performed with the plant in operation were carried out. Service was interrupted for approximately thirteen hours.

Lightning surges and unidentified conditions caused seven brief outages, and two shutdowns for emergency repairs to the step up transformer station required a total interruption time of eighty minutes.

FORT SMITH PLANT

The number of customers supplied by the Fort Smith plant increased slightly and kilowatt hours generated increased by over 16% as compared with the previous year, to a total of 650,415. Power is supplied to approximately sixty Federal Government connections and to some ninety-five other domestic and commercial services. During the year the distribution system was extended to serve additional residences and necessary work was carried out to maintain the system in first class condition. The operating staff was increased by the appointment of a third full time operator.

Only two complete power failures which had a total duration of less than seven minutes occurred during the year. High winds were responsible for a number of outages that affected only portions of the system, most of which were of only a few minutes duration; a portion of one line suffered an eight hour interruption when a pole was accidentally broken by a truck.

MAYO RIVER HYDRO ELECTRIC POWER PLANT

The current fiscal year covers the first full year of operation for this plant, which was placed in service in November 1952.

Total production for the twelve months ending March 31st, 1954 was 14,685,000 Kilowatt hours. Delivery of power to the Mackeno Mining Company's mill located near Keno City commenced in April; this company takes power from the Keno terminus of the Commission's 69,000 volt transmission line, having made private arrangements for step down transformer facilities at that point.

Consumption of power by the two mining companies now being supplied has reached the point that plant capacity is entirely consumed during peak load periods and further production from the existing generating unit will be possible only by improvement of load factors which are already reasonably high. The entire output is consumed as primary industrial power, except for a small amount (less than 2% of output) supplied as commercial power to Mayo Light and Power Company for retail distribution in the settlement of Mayo Landing, and to the Department of National Defence radio station at Mayo. The indications are that consumption will continue at the level of the fiscal year under review.

No particular operating problems were encountered with this plant during the year and only minor maintenance work was necessary to maintain the plant and equipment in first class condition. The plant was shut down for approximately 12 hours on September 28th to permit carrying out routine maintenance procedures as well

as the permanent installation of certain minor pieces of equipment that were not available before the plant was placed in service in 1952.

General

During the year a general review of salaries and working conditions was carried out by a special committee appointed by the Chairman. The Committee recommended several increases and adjustments in salaries and benefits, which were adopted by the Commission, and put into effect upon approval by the Governor General in Council.

Due to the resignation of the Commission's field engineer, who has not been replaced at the present time, the arrangements for the Commission to make periodic stream flow measurements of the Emile, Snare and Lockhart Rivers for the Water Resources Division of the Department of Northern Affairs and National Resources was discontinued.

No field investigations were carried out by or on behalf of the Commission during the year.

Maps showing the location of the Commission's operations and general layout of the main transmission lines are included in this report.

Financial

Funds are advanced by the Minister of Finance for the construction of individual plants and each plant is operated on a self-sustaining basis. Funds advanced for capital purposes are repaid by amortization; profit and loss are not regarded as transferable between plants. The rates charged for power sold are established in accordance with Section 11 of the Act.

The fiscal year has been established as the twelve month period ending on the 31st of March.

SNARE RIVER POWER PLANT

The Capital Loan for this plant is repayable over the 20 year period ending March 31st, 1969. The interest rate is $3\frac{1}{8}\%$ per annum.

The fifth annual debt retirement instalment amounting to \$325,513.13 was paid to the Minister of Finance as of March 31st, 1954. Of this sum \$198,950.55 was principal and \$126,562.58 interest. Revenue from sale of power and miscellaneous income exceeded expenditures, excluding reserve for depreciation and obsolescence by \$214,317.16; however, after allowing for this reserve there was a deficit of \$22,019.58.

FORT SMITH POWER PLANT

The Capital Loan for this plant is repayable over the 20 year period ending March 31st, 1971. The interest rate is $3\frac{1}{8}\%$ per annum on all but \$3,000 of the capital loan on which the rate of $3\frac{3}{4}\%$ applies.

The third annual debt retirement instalment amounting to \$9,628.19 was paid to the Minister of Finance as of March 31st, 1954. Of this sum \$5,532.17 was principal and \$4,096.02 interest. The Capital Loan was increased by \$3,000.00, advanced on March 30th, 1954, to provide funds for the cost of extensions to the distribution system and procurement of special tools and equipment. The interest on this advance to March 31st, 1954, was included in the above payment and repayment of principal and subsequent interest will be included with future annual payments commencing March 31st, 1955.

The reserves in respect to this plant have been increased to \$50,000, of which \$48,073.60 is shown in the balance sheet as contingency reserve fund and \$1,926.40 as reserve for depreciation.

Since a satisfactory reserve has now been established in respect to this plant, and in view of the increase in power consumption in the Fort Smith area, the Commission decided to recommend a general rate reduction to be effective upon approval by the Governor General in Council.

MAYO RIVER POWER PLANT

On completion of construction the total capital loan for this plant was \$4,306,217.97. This is repayable over the 20 year period ending March 31st, 1973. The interest rate is $3\frac{1}{8}\%$ per annum.

The first annual debt retirement instalment amounting to \$292,800.89 was paid to the Minister of Finance as of March 31st, 1954. Of this sum \$158,231.57 was principal and \$134,569.32 interest.

This plant, having been in operation since November 1952 had an accumulated Operating Surplus of \$5,522.05 as of March 31st, 1954. In addition, reserves totalling \$166,196.27 have been established as of March 31st, 1954. These reserves appear in the Balance Sheet as \$22,233.99 as Reserve for Contingencies and \$143,962.28 as Depreciation Reserve.

As required by the Northwest Territories Power Commission Act the rate charged for power was reviewed near the close of the fiscal year and it was decided to recommend a reduction of $\frac{1}{4}\text{c/KWhr.}$ in the rate charged for power supplied to mining companies, to be effective with the commencement of the next fiscal year.

CORPORATION INCOME TAX

Depreciation taken on plants, equipment and buildings exceeded net earnings and the Commission was, therefore, not liable for payment of this tax for the fiscal year under review.

GENERAL

Included in this report is the Consolidated Balance Sheet of the Commission as at March 31st, 1954, certified by the Auditor General of Canada, which reflects the financial standing of the Snare River, Fort Smith and Mayo River Plants. In addition to the Consolidated Balance Sheet the following statements are appended:

Schedule I—Statement of Income and Expenses

Schedule II—Statement of Operating Expenses

Schedule III—Statement of Maintenance Expenses

Schedule IV—Statement of Administrative and General Expense

Schedule V—Statement of Assets and Liabilities according to Location

The Comptroller of the Treasury, Department of Finance supplied all accounting and financial services to the Commission.

Ottawa, June 18, 1954.

The Chairman,
Northwest Territories Power Commission,
Ottawa, Ontario.

Dear Sir:

The accounts of the Northwest Territories Power Commission having been audited under my direction for the fiscal year ended March 31, 1954, I forward herewith a copy of my report which has been made to the Minister of Northern Affairs and National Resources, in accordance with Section 87 of the Financial Administration Act, together with the Balance Sheet as at the date of closing and the following supporting schedules:

Schedule

- I Statement of Income and Expense
- II Statement of Operating Expenses
- III Statement of Maintenance Expenses
- IV Statement of Administrative and General Expenses
- V Statement of Assets and Liabilities according to Location.

Yours faithfully,

(Sgd.) WATSON SELLAR,
Auditor General of Canada.

Ottawa, June 18, 1954.

The Honourable Jean Lesage,
Minister of Northern Affairs and National Resources,
Ottawa.

Sir:

Re: NORTHWEST TERRITORIES POWER COMMISSION

Having completed the audit of the accounts of the above-noted Commission for the fiscal year ended March 31, 1954, I now report to you, in compliance with the requirements of Section 87 of the Financial Administration Act, the results of the examination both of the accounts, and of the Financial Statement forwarded herewith.

It was only possible to verify in part, during the audit, the existence intact of the Commission's moveable assets—including construction and transportation equipment, furniture and boarding house equipment because the stocktaking of these, contemplated in the previous audit report, was not yet completed.

The depreciation charges included in the operating costs for the year were \$468,223, compared with \$275,766 in the previous year; as percentages, these amounts represent approximately 5.284% and 3.125% of cost, respectively. As previously, the charges for the year were not based on engineering determinations according to life expectancy of the various installations and other assets. Instead, they were computed, to the extent that earnings permitted, at rates which are allowed under the Income Tax Regulations. Accordingly, in so far as the rates used are not truly representative, neither the deficit of \$1.00 for the year (Schedule I) nor the accumulated surplus of \$6,874 (shown by the balance sheet) may be regarded as representing a true and fair view of the results of the Commission's operations.

Although a Reserve for Contingencies has been established in the amount of \$70,308, it may be noted from the balance sheet that accumulated earnings of only \$6,874 are available should the contemplated contingency arise.

Subject to the foregoing, I certify that, in my opinion,

1. proper books of account have been kept by the Commission;
2. the Financial Statement has been prepared on a basis consistent with that of the preceding year and is in agreement with the books of account; also, the Balance Sheet and the

accompanying Statement of Income and Expense, respectively, give a true and fair view of the state of the Commission's affairs as at March 31, 1954, and of the results of the Commission's operations for the fiscal year;

3. the transactions of the Commission that have come under my notice have been within its powers as set forth in the Northwest Territories Power Commission Act and in the Financial Administration Act.

Yours faithfully,

(Sgd.) WATSON SELLAR,
Auditor General of Canada.

NORTHWEST TERRITORY
(Established under the North

BALANCE SHEET

ASSETS

Cash on Hand and in Bank.....	\$ 290,589
Accounts Receivable.....	165,217
Investments in Government of Canada Bonds and Treasury Bills, at cost (par value \$130,000, market value \$129,845).....	\$ 128,400
Add, Accrued interest.....	476
	128,876
Inventories—Food, returnable containers, materials and supplies, and spare parts, as certified by the Manage- ment, at cost.....	16,932
Security Deposits—per contra:	
Cash on hand and in bank.....	490
Securities.....	75,000
	75,490
Prepaid Insurance.....	3,611

Fixed Assets:

Power plants, distribution systems, general plant, construction plant, and capital works under con- struction, at cost.....	8,861,660
---	-----------

Deduct:

Deduct, Accumulated allowance for depreciation and obsolescence.....	1,121,237
	7,740,423
	\$8,421,138

Note: For details of assets and liabilities, according to locations, see Schedule V-1.

Certified Correct

(Sgd) F. H. Collins
Accountant

(Sgd.) G. E. Lowe
for Chairman

WER COMMISSION

territories Power Commission Act)

MARCH 31, 1954

LIABILITIES AND CAPITAL

Liabilities

Accounts Payable.....	\$	8,986	
Salaries and Wages.....		3,328	
Security Deposits, consumers—per contra..		75,490	
		<u> </u>	\$ 87,804

Capital

Government of Canada:

Advances received on Capital Account, under authority of s.15 of the Act (re- payable within 20 years with interest at 3½% p.a., or 3¾% p.a.—including \$198,951 repayable as at March 31, 1954)	8,326,460
--	-----------

Surplus:

Surplus from operations to March 31, 1954	\$	6,874	
Deduct,			
Reserved for contingencies.....		<u>70,308</u>	
Deficiency.....			—63,434
Reserve for Contingencies.....		70,308	
		<u> </u>	8,333,334
			<u> </u>
			<u>\$8,421,138</u>

Signed for the purpose of identification only and subject to my Report (copy herewith) to the Minister of Northern Affairs and National Resources.

(Sgd.) Watson Sellar,
Auditor General of Canada

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Income and Expense
for the year ended March 31, 1954

Income	TOTAL	SNARE RIVER PLANT	FORT SMITH PLANT	MAYO RIVER PLANT
Sales of power—				
Mines	\$762,501	\$379,280	—	\$383,221
Commercial	64,032	44,584	\$ 19,448	—
Sales of lighting—				
Commercial	40,291	—	30,281	10,010
Domestic	18,232	—	18,232	—
Municipal	600	—	600	—
Connection charges	124	—	124	—
Rents—Living quarters, etc....	2,953	1,820	—	1,133
Interest	3,718	696	566	2,456
Total Income	892,451	426,380	69,251	396,820
Expense				
Operating, per Schedule II	107,439	60,779	28,132	18,528
Maintenance, per Schedule III..	16,036	7,361	1,765	6,910
Administrative and general, per Schedule IV	32,804	17,360	3,419	12,025
Interest	265,235	126,563	4,103	134,569
Cash discounts on power and light accounts	2,715	—	2,715	—
Total Expense	424,229	212,063	40,134	172,032
Net Income for the year, before providing for depreciation and obsolescence	468,222	214,317	29,117	224,788
Deduct, Allowance for depreciation and obsolescence of fixed assets.	468,223	236,336	7,459	224,428
Surplus (Deficit) for the year, per Balance Sheet	— 1	— 22,019	21,658	360

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Operating Expenses
for the year ended March 31, 1954

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>	<u>MAYO RIVER PLANT</u>
Salaries and wages.....	\$ 73,130	\$ 42,843	\$ 12,754	\$ 17,533
Employer's contributions to employees' welfare schemes.....	2,590	1,715	401	474
Diesel oil.....	14,060	—	14,060	—
Charter of aircraft.....	11,965	11,965	—	—
Power line rentals.....	2,285	2,285	—	—
Tractors, snowmobile, boat, etc...	2,311	1,420	411	480
Lubricating oil.....	476	—	476	—
Supplies.....	452	388	30	34
Miscellaneous.....	170	163	—	7
Totals.....	107,439	60,779	28,132	18,528

Distributed as follows:

Production of power.....	\$ 84,767	\$ 39,013	\$ 27,706	\$ 18,048
Transmission system.....	8,808	8,382	426	—
General plant.....	13,864	13,384	—	480
Totals.....	107,439	60,779	28,132	18,528

NORTHWEST TERRITORIES POWER COMMISSION**Statement of Maintenance Expenses****for the year ended March 31, 1954**

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>	<u>MAYO RIVER PLANT</u>
Insurance.....	\$ 2,893	\$ 1,105	\$ 1,089	\$ 699
Furniture and fixtures.....	403	390	—	13
Communication systems.....	380	380	—	—
Reservoirs, dams and waterways..	6,601	2,917	—	3,684
Structures and improvements.....	3,153	1,898	156	1,099
Equipment, generally.....	2,280	568	520	1,192
Miscellaneous.....	326	103	—	223
Totals.....	16,036	7,361	1,765	6,910

Distributed as follows:

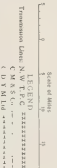
Production of power.....	\$ 8,860	\$ 3,080	\$ 1,562	\$ 4,218
Transmission systems.....	2,055	1,735	203	117
General plant.....	5,121	2,546	—	2,575
Totals.....	16,036	7,361	1,765	6,910

NORTHWEST TERRITORIES POWER COMMISSION**Statement of Administrative and General Expenses****for the year ended March 31, 1954**

	<u>TOTAL</u>	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>	<u>MAYO RIVER PLANT</u>
Salaries—executives and officers...	\$ 15,979	\$ 7,003	\$ 1,315	\$ 7,661
Salaries and wages.....	3,407	1,142	851	1,414
Employer's contributions to employees' welfare schemes.....	790	301	88	401
Travel expense.....	3,400	1,641	473	1,286
Freight and express.....	503	485	6	12
Stationery and office supplies.....	659	254	229	176
Telephone and telegraph.....	1,326	567	74	685
Postage.....	349	123	122	104
Advertising.....	165	159	—	6
Miscellaneous.....	1,285	744	261	280
Boarding house, being the excess of food costs over recoveries of \$3,995.....	4,941	4,941	—	—
Totals.....	32,804	17,360	3,419	12,025

Note: As provided under Section 23 of the Northwest Territories Power Commission Act, the staff of the Comptroller of the Treasury do the Commission's accounting. The costs of these services and the rental value of the premises occupied by the Commission at Ottawa are borne from votes of Parliament provided for the Departments of Finance and Public Works, respectively; in consequence, they are not reflected in the figures shown above.

NORTHWEST TERRITORIES POWER COMMISSION



N.W.T.P.C.
SHARPE RIVER
POWER PLANT
8500 H.P.

C.M.A.S.C.
BLUESH
POWER PLANT
4700 H.P.

N.W.T.P.C.
YELLOWKNIFE
TERMINAL

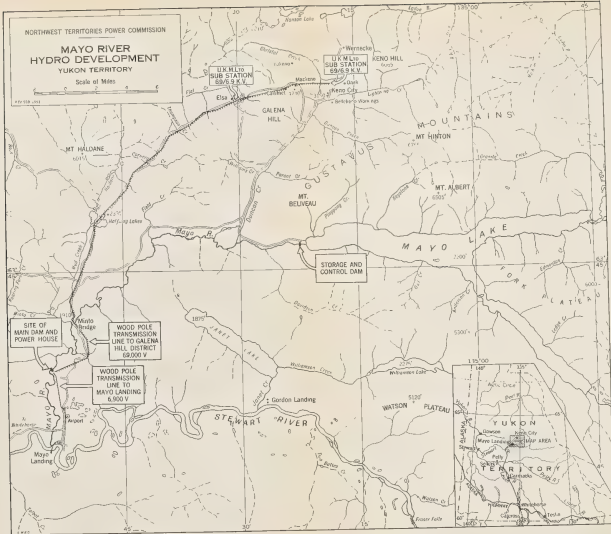


NORTHWEST TERRITORIES POWER COMMISSION

MAYO RIVER HYDRO DEVELOPMENT YUKON TERRITORY

Scale of Miles

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GOVERNMENT OF CANADA

Northwest Territories Power Commission

Northwest Territories Power Commission

ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1955



OTTAWA, CANADA

GOVERNMENT OF CANADA

Northwest Territories Power Commission

ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1955

OTTAWA, CANADA

Northwest Territories Power Commission

June 30, 1955

The Honourable Jean Lesage, M.P.,
Minister of Northern Affairs and National Resources,
Ottawa, Ontario.

Dear Sir:—

I beg to submit herewith the report of the Northwest Territories Power Commission for the fiscal year ending March 31st, 1955, as required under Section 24 of the Northwest Territories Power Commission Act, Chapter 196, R.S.C. 1952.

Respectfully submitted,

R. G. ROBERTSON,
Chairman.

NORTHWEST TERRITORIES POWER COMMISSION

1954 - 1955

R. G. ROBERTSON *Chairman*

G. E. LOWE *Member*

T. M. PATTERSON *Member*

E. W. HUMPHRYS *Chief Engineer*

F. H. COLLINS *Accountant*

J. I. NICOL *Secretary*

**ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1955
OTTAWA, CANADA**

The Northwest Territories Power Commission was created by an Act of Parliament in 1948 (amended in 1950) and is empowered to construct and operate electric power plants in the Northwest Territories and Yukon Territory. The Act requires that such projects shall be self-sustaining, and consequently the rates charged for power must provide sufficient revenue to cover interest on investment, repayment of principal over a period of years, operating and maintenance expenses and the setting up of a contingency reserve. The Commission is thus a Federal Government Agency concerned with the construction and management of electric power plants on a commercial basis.

Over the past seven years its operations have resulted in the establishment of an 8,350 horsepower hydro-electric development on the Snare River, some 90 miles northwest of Yellowknife, which supplies power to the Yellowknife mining area and townsite; a 520 horsepower diesel generating plant and distribution system supplying the settlement of Fort Smith, N.W.T., and environs; and a 3,000 horsepower hydro-electric plant in the Yukon Territory located on the Mayo River approximately five miles north of Mayo Landing, supplying the mines on Galena and Keno Hills and the settlements of Mayo Landing and Keno City.

Mr. T. M. Patterson was appointed a member of the Commission on March 23, 1955 succeeding the late Mr. Norman Marr.

SNARE RIVER POWER PLANT

Kilowatt hours generated during the year totalled 38,254,300, representing an increase of approximately 6.3% over the previous year. The sale of primary power increased by over 18% to a total of over 28,492,000 kilowatt hours, but there was a decrease of approximately 22% in the sale of secondary power for production of steam. The net result was an increase in total revenue of approximately 13% as compared to the previous year. During normal operating periods the total load approached plant capacity on several occasions by virtue of secondary power consumption, with primary power load reaching approximately 60% of generating capacity.

The major plant improvement carried out during the year was the intallation of a power line carrier telephone system operating over the transmission line between the Snare River Power Plant and the Yellowknife Terminal Station. The original shipment of this equipment was lost in transit on Great Slave Lake when the barge carrying it foundered in a storm. The shipment was covered by insurance. Our supplier was able to replace the equipment with minimum delay and the installation was completed in January 1955. This installation provides first class telephone communication between the Snare River Plant and subscribers of the public telephone system in Yellowknife, and is expected to be almost entirely free of interruptions due to weather conditions, although its performance under heavy icing conditions is yet to be tested.

The severe icing conditions experienced in the two previous years were not repeated in the fall of 1954 and hence there were no extensive interruptions to telephone communications prior to the installation of the power line carrier equipment.

Maintenance of equipment and structures was routine in nature with the exception of the replacement of the bus support insulators in the step-up substation at the Snare River Plant.

In the summer of 1954 a small maintenance crew was employed on the transmission line engaged mainly in repairing the metallic telephone circuit which suffered considerable damage by heavy icing conditions during the previous winter.

Two plant shutdowns to permit carrying out maintenance operations took place on July 1st and October 17th and involved a total interruption time of approximately 17 hours. Atmospheric and unidentified conditions caused four brief interruptions to supply over the transmission line and fault conditions developing on associated lines resulted in nine failures of the parallel connection with Consolidated Mining and Smelting Company's system, all of which were of short duration.

FORT SMITH PLANT

There was an increase in the number of customers supplied by this plant and kilowatt hours generated increased by over 27% as compared with the previous year, to a total of 828,550. Power is supplied to approximately eighty six Federal Government connections (representing approximately one hundred separate premises), and to some one hundred and ten domestic and commercial customers. During the year the distribution system was extended to serve additional residences and necessary work was carried out to maintain the system in first class condition.

There were no complete power failures affecting the whole system, and only a few interruptions of short duration occurred to portions of the system as a result of storm conditions. Maintenance requirements necessitated three partial outages which were arranged at convenient times and after advance notice to the customers affected.

The peak loads experienced by this plant are now such that there is inadequate reserve capacity for standby purposes. In view of this, and having in mind the anticipated load growth over the next two years, it was decided to proceed with the installation of a fourth generating unit during 1955.

A general revision of the rate structure providing a substantial reduction for all consumers, but for domestic services in particular, became effective on April 1st, 1954. As a result, the total revenue declined approximately 4%, although power produced increased approximately 27%. Operating costs increased by approximately 44% due primarily to increased fuel consumption, higher unit cost of fuel and increased wage expense due to employment of a third full time operator.

MAYO RIVER HYDRO ELECTRIC POWER PLANT

Power produced during the year ending March 31st, 1955 totalled 15,266,000 kilowatt hours, an increase of 4% over the previous year. There was no significant load increase during the year, and consumption fell slightly below expectations due to reduction in demand of two chief customers in the latter part of the year. However, the peak load imposed on the plant reached plant capacity on several occasions, and only a small amount of additional firm power could be supplied, and this only if load factors are improved.

During the year supply of power to a private retail distributor supplying Keno City townsite commenced, which has resulted in continuous power being made available to approximately 30 customers in this area who previously either did not enjoy electric service, or had only limited supply at excessive cost.

There were three major interruptions to service totalling approximately eleven hours, one of which was occasioned by the annual inspection of the turbine, and the others by the failure and replacement of a potential transformer in the switchgear. Atmospheric and unidentified conditions caused a number of brief outages on the main transmission line, and lightning damage to a metering set resulted in the supply to Mackeno Mining Company being interrupted for approximately eighteen hours.

The continued erosion of the soft rock below the spillway is of some concern and is being watched. Some lateral displacement of the lower end of the spillway chute developed during the summer of 1954 but is not thought to be associated with the rock erosion. Periodic measurements are being taken to determine whether or not this movement is progressive, but at year end there had not been any significant increase. Heavy rain storms caused appreciable erosion of the gravel embankment on the downstream face of the main dam. The embankment is being levelled and reworked to prevent progressive development of gullies, but more permanent preventative measures will have to be carried out as soon as it is opportune to do such work.

FINANCIAL

Funds are advanced by the Minister of Finance for the construction of individual plants, and each plant is operated on a self-sustaining basis. Funds advanced for capital purposes are repaid by amortization, and profit and loss are not regarded as transferable between plants. The rates charged for power sold are established in accordance of Section Eleven of the Act.

The fiscal year has been established as the twelve month period ending on the 31st of March.

CORPORATION INCOME TAX

A study of the effect of Corporation Income Tax on the Commission's operations revealed that, due to the nature of the capital structures under which the Commission operates, it would eventually be impossible to meet all obligations without substantial rate increases. In view of its special nature and function the Commission has now been relieved of responsibility for payment of income tax, and the financial statements included in this report have been drawn up on a tax exempt basis; consequently funds previously assigned to depreciation accounts have been transferred to the contingency reserve. Charges shown as depreciation for the current year represent repayments of capital at the end of the fiscal year.

SNARE RIVER POWER PLANT

The Capital Loan for this plant is repayable over the 20 year period ending March 31st, 1969. The interest rate is $3\frac{1}{8}\%$ per annum.

The sixth annual debt retirement instalment, amounting to \$325,513.13, was paid to the Minister of Finance as of March 31st, 1955. Of this sum, \$205,167.75 was principal and \$120,345.38 interest. Revenue from sale of power and miscellaneous income increased by approximately 13% as compared with the previous

year and exceeded costs by \$55,057.03; consequently, the accumulated deficit in respect to the Snare River Plant has now been liquidated, and \$5,000 has been assigned to inaugurate the contingency reserve for this plant.

FORT SMITH POWER PLANT

The capital Loan for this plant is repayable over the 20 year period ending March 31st, 1971. The interest rate is $3\frac{1}{8}\%$ per annum on all but \$3,000 of the capital loan on which the rate of $3\frac{3}{4}\%$ applies.

The fourth annual debt retirement instalment, amounting to \$9,867.87, was paid to the Minister of Finance as of March 31st, 1955. Of this sum, \$5,834.40 was principal and \$4,033.47 interest. Total revenue exceeded costs by \$7,269.44. Allocation to the contingency reserve of the current year's surplus, together with funds previously held as operating surplus and depreciation reserve, has increased the contingency reserve in respect to the Ft. Smith plant to \$74,500.00.

MAYO RIVER POWER PLANT

The Capital Loan for this plant is repayable over the 20 year period ending March 31st, 1973. The interest rate is $3\frac{1}{8}\%$ per annum.

The second annual debt retirement instalment, amounting to \$292,800.89, was paid to the Minister of Finance as of March 31st, 1955. Of this sum, \$163,176.31 was principal and \$129,624.58 interest.

Net revenue for the year declined approximately 23% to \$47,805.15, reflecting a reduction of $\frac{1}{4}$ c per kilowatt hour in the charge for firm industrial power, effective April 1st, 1954. The transfer to contingency reserve account of the current year's surplus, and funds that were previously held as operating surplus and depreciation reserve, has increased the contingency reserve in respect to this plant to \$220,500.00.

GENERAL

Included in this report is the Consolidated Balance Sheet of the Commission as at March 31st, 1955, certified by the Auditor General of Canada, which reflects the financial standing of the Snare River, Fort Smith and Mayo River Plants. In addition to the Consolidated Balance Sheet the following statements are appended:

- Schedule I—Consolidated Statement of Income and Expense
- Schedule II—Statement of Surplus
- Schedule III—Statement of Income and Expense by Location
- Schedule IV—Statement of Assets and Liabilities according to Location

The Comptroller of the Treasury, Department of Finance, supplies all accounting and financial services to the Commission.

OFFICE OF THE AUDITOR GENERAL
Canada

Ottawa, June 24, 1955

The Chairman,
Northwest Territories Power Commission,
Ottawa, Ontario.

Attention: Mr. John I. Nicol,
Secretary

Dear Sir,

The examination of the accounts and financial statements of Northwest Territories Power Commission for the year ended March 31, 1955 has been completed, and I have reported thereon to the Minister of Northern Affairs and National Resources in compliance with section 87 of the Financial Administration Act. Enclosed are:

- (a) audited financial statements of the Commission for the year ended March 31, 1955;
- (b) signed copy of audit report dated June 24, 1955, and
- (c) six unsigned copies of the audit report, to be available for distribution to the Members, and for office files.

Yours faithfully,

(Sgd.) WATSON SELLAR,
Auditor General.

Ottawa, June 24, 1955.

The Honourable Jean Lesage,
Minister of Northern Affairs and National Resources,
Ottawa.

Sir,

The accounts and financial statements of Northwest Territories Power Commission have been examined for the year ended March 31, 1955 and certified financial statements are attached.

The Balance Sheet item for inventories of maintenance supplies and spare parts is as reflected by stores accounts maintained at the Commission's Head Office. The item does not include residual supplies on hand when construction work was completed at the Snare River Plant, and these supplies remain recorded as charges against capital asset accounts although usable for maintenance purposes. No physical inventory has been taken at the Plant, of all the supplies and spare parts, to permit appropriate adjustment of the accounts, but steps to that end are planned. At the Mayo River Plant, no physical inventory had been taken to March 31, 1955, to verify the maintenance supplies and spare parts, but stocktaking was stated to be currently in progress.

Equipment ledgers recording descriptions and values of individual items acquired for each of the three plants operated by the Commission, are maintained at the Head Office, but physical inventories of items currently in service have yet to be taken at the Snare River and Mayo River Plants.

In compliance with the requirements of section 87 of the Financial Administration Act I report that, in my opinion, subject to the foregoing observations:

- (a) proper books of account have been kept by the Commission;
- (b) the financial statements of the Commission
 - (i) are in agreement with the books of account and were prepared on a basis consistent with that of the preceding year save that, whereas in the preceding year supplementary charges were included for depreciation over and above the amount equivalent to the annual amortization cost with respect to the loans

received from the Government, in the year under review no such supplementary charges were made—an accounting change which, in the audit view is appropriate,

- (ii) in the case of the balance sheet, give a true and fair view of the state of the Commission's affairs as at the end of the financial year, and
 - (iii) in the case of the statement of income and expense, give a true and fair view of the income and expense of the Commission for the financial year, and
- (c) the transactions of the Commission that have come under my notice have been within the powers of the Commission under the Financial Administration Act and any other Act applicable to the Commission.

Yours faithfully,

(Sgd.) WATSON SELLAR,
Auditor General.

NORTHWEST TERRITORY

(Established by the Northwest

BALANCE SHEET**ASSETS**

Cash:			
General.....	\$	94,977	
Capital Account.....		178,918	
		<hr/>	\$ 273,895
Accounts Receivable.....			169,528
Prepaid Expenses:			
Inventories of maintenance supplies and spare parts, at cost.....		22,015	
Inventories of staff house stores, at cost.....		1,046	
Other prepaid expenses.....		2,027	
		<hr/>	25,088
Bonds held as Consumers' Security Deposits (see contra)			75,000
Investment in Government of Canada Bonds, at cost (market value \$252,215) held for Contingency Reserve Fund (see contra).....			251,222
Capital Assets, at cost:			
Power plants.....		5,959,464	
Transmission and distribution facilities.....		1,961,041	
Staff dwellings, warehouses and miscellaneous build- ings.....		440,539	
Communication, transportation and other equipment		502,636	
		<hr/>	8,863,680
Less: Accumulated provision for depreciation.....		1,312,141	
		<hr/>	7,551,539
			<hr/>
			<u>\$8,346,272</u>

Certified correct:

(Sgd.) F. H. Collins,
Accountant

Approved:

(Sgd.) R. G. Robertson
Chairman

ER COMMISSION

ories Power Commission Act)

MARCH 31, 1955

LIABILITIES

Accounts Payable and Accrued Liabilities.....	\$ 11,923
Instalment due to the Government of Canada in Repayment of Advances.....	205,168
Consumers' Security Deposits.....	75,570
Contingency Reserve Fund.....	300,000

Capital

Advances from the Government of Canada under section 15 of the Act.....	\$7,958,499	
Less: Instalment due as at March 31, 1955, as above.....	205,168	7,753,331
	<hr/>	
Surplus, per Statement of Surplus.....		280

\$8,346,272

Certified in accordance with my report dated June 24, 1955 to the Minister of Northern Affairs and National Resources, under section 87 of the Financial Administration Act.

(Sgd.) Watson Sellar,
Auditor General of Canada

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Income and Expense for the year ended March 31, 1955

Income

Sales of power, less "prompt payment" discounts—		
Mining	\$ 788,929	
Commercial	112,953	
Domestic	16,922	
	<hr/>	\$ 918,804
Miscellaneous		12,778
		<hr/>
		931,582

Expense

Operating—		
Salaries and wages	\$ 91,159	
Diesel oil	19,837	
Charter of aircraft	10,777	
Travel and removal expenses	4,652	
Staff house food costs (net)	4,468	
Miscellaneous	10,161	
	<hr/>	141,054
Maintenance		18,313
Administrative—		
Salaries	22,356	
Miscellaneous	11,546	
	<hr/>	33,902
Interest on advances from the Govern- ment of Canada		254,003
Provision for depreciation		374,178
	<hr/>	821,450
Net Income, carried to Surplus Account.		<hr/> \$110,132 <hr/>

NOTE: The above administrative expenses do not include charges with respect to: (a) accounting services provided by the Office of the Comptroller of the Treasury, and (b) office premises provided by the Department of Public Works.

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Surplus for the year ended March 31, 1955

Balance as at April 1, 1954 (Deficit).....	\$	63,434
<i>Add:</i> Adjustment of prior years' depreciation.....	\$	183,274
Net income for the year ended March 31, 1955, per Statement of Income and Expense.....		110,132
		<u>293,406</u>
		229,972
<i>Deduct:</i> Addition to Contingency Reserve Fund.....		229,692
Balance as at March 31, 1955.....		<u><u>280</u></u>

NORTHWEST TERRITORIES POWER COMMISSION

Assets and Liabilities, by Plants, as at March 31, 1955

Assets	SNARE RIVER PLANT	FORT SMITH PLANT	MAYO RIVER PLANT	TOTAL
Cash—				
General.....	\$ 60,487	\$ 12,083	\$ 22,407	\$ 94,977
Capital Account.....	78,539	101	100,278	178,918
Accounts Receivable.....	114,635	11,758	43,135	169,528
Prepaid Expenses:				
Inventories of maintenance supplies and spare parts, at cost.....	1,970	4,322	15,723	22,015
Inventories of staff house stores, at cost.....	1,046			1,046
Other prepaid expenses.....	1,232	120	675	2,027
Bonds held as Consumers'				
Security Deposits (see contra)	50,000		25,000	75,000
Investment in Government of Canada Bonds, at cost, held for Contingency Reserve Fund (see contra).....	37,066	49,572	164,584	251,222
Capital Assets, at cost:				
Power plants.....	2,503,397	93,337	3,362,730	5,959,464
Transmission and distribution facilities.....	1,418,471	43,393	499,177	1,961,041
Staff dwellings, warehouses and miscellaneous buildings	303,306	3,927	133,306	440,539
Communication, transporta- tion and other equipment..	311,102	3,441	188,093	502,636
Less: Accumulated provision for depreciation.....	969,116	21,617	321,408	1,312,141
Total Assets.....	3,912,135	200,437	4,233,700	8,346,272
Liabilities				
Accounts Payable and Accrued Liabilities.....	5,942	2,614	3,367	11,923
Instalment due to the Govern- ment of Canada in Repayment of Advances.....	205,168			205,168
Consumers' Security Deposits..	50,000	570	25,000	75,570
Contingency Reserve Fund....	5,000	74,500	220,500	300,000
Capital—				
Advances from the Govern- ment of Canada under sec- tion 15 of the Act.....	3,851,052	122,637	3,984,810	7,958,499
Less: Instalment due as at March 31, 1955, as above	205,168			205,168
Surplus, per Statement of Surplus.....	141	116	23	280
Total Liabilities.....	3,912,135	200,437	4,233,700	8,346,272

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Income and Expense, by Plants, for the year ended March 31, 1955

Income	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>	<u>MAYO RIVER PLANT</u>	<u>TOTAL</u>
Sales of power, less "prompt payment" discounts—				
Mining.....	\$ 425,375		\$ 363,554	\$ 788,929
Commercial.....	52,121	\$ 48,189	12,643	112,953
Domestic.....		16,922		16,922
Miscellaneous—				
Rents.....	2,331		1,335	3,666
Interest.....	1,171	1,186	6,515	8,872
Sundries.....		240		240
Total Income.....	480,998	66,537	384,047	931,582
<hr/>				
Expense				
Operating—				
Salaries and wages.....	53,703	17,626	19,830	91,159
Diesel oil.....		19,837		19,837
Charter of aircraft.....	10,777			10,777
Travel and removal expense..	3,005	571	1,076	4,652
Staff house food costs (net)...	4,468			4,468
Trucks, tractors, etc.....	1,222	657	951	2,830
Power line rentals.....	2,400			2,400
Miscellaneous.....	2,345	1,263	1,323	4,931
Maintenance—				
Structures and improvements.	2,125	258	2,954	5,337
Equipment.....	3,326	2,554	6,294	12,174
Miscellaneous.....	262	94	446	802
Administrative—				
Salaries and wages.....	11,064	3,748	7,544	22,356
Employer's contributions to employees' welfare schemes.	3,196	1,216	1,556	5,968
Insurance.....	947	1,077	668	2,692
Travel.....	915	87	429	1,431
Telephone and telegraph.....	380	78	124	582
Miscellaneous.....	293	333	247	873
Interest on Government of Canada advances.....	120,345	4,034	129,624	254,003
Provision for depreciation.....	205,168	5,834	163,176	374,178
Total Expense.....	425,941	59,267	336,242	821,450
Net Income.....	55,057	7,270	47,805	110,132

NORTHWEST TERRITORIES POWER COMMISSION

Surplus, by Plants, for the year ended March 31, 1955

	<u>SNARE RIVER PLANT</u>	<u>FORT SMITH PLANT</u>	<u>MAYO RIVER PLANT</u>	<u>TOTAL</u>
Balance as at April 1, 1954.....	\$ 87,302	\$ 17,346	\$ 6,522	\$ 63,434
<i>Add:</i> Adjustment of prior years' depreciation.....	37,386	1,926	143,962	183,274
Net income for the year ended March 31, 1955.....	55,057	7,270	47,805	110,132
	5,141	26,542	198,289	229,972
<i>Deduct:</i> Addition to Contingency Reserve Fund.....	5,000	26,426	198,266	229,692
Balance as at March 31, 1955....	141	116	23	280

NORTHWEST TERRITORIES POWER COMMISSION

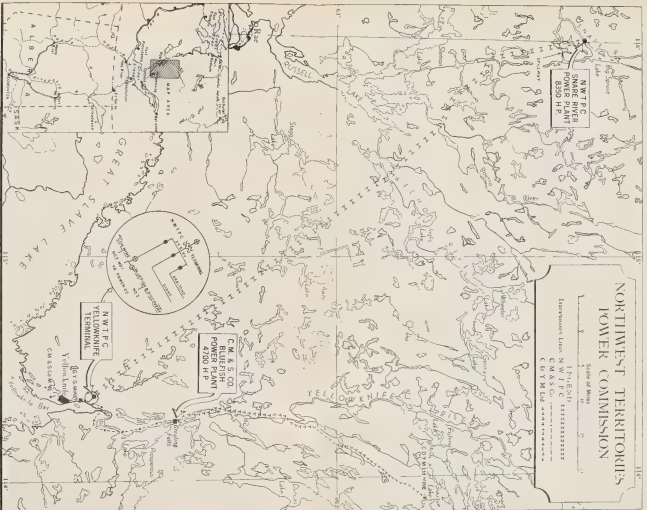
Scale of Miles

1 INCHES
EQUIVALENT LINES NWTPC TRANSMISSION
CMAS Co. TRANSMISSION LINES
CDYM Ltd TRANSMISSION LINES

NWTPC
SNARE RIVER
POWER PLANT
8350 H.P.

C.M. & S. CO.
BLUEFISH
POWER PLANT
4700 H.P.

NWTPC
YELLOWKNIFE
TERMINAL



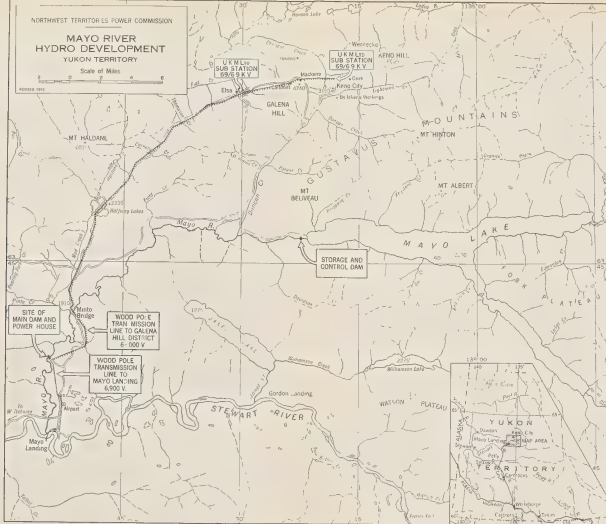
NORTHWEST TERRITORIES POWER COMMISSION

MAYO RIVER HYDRO DEVELOPMENT YUKON TERRITORY

Scale of Miles

0 1 2 3 4 5 6

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Northwest Territories Power Commission

Northwest Territories Power Commission

ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1956

OTTAWA, CANADA

GOVERNMENT OF CANADA

Northwest Territories Power Commission

ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1956

OTTAWA, CANADA



Northwest Territories Power Commission

June 27 1956



The Honourable Jean Lesage, M.P., P.C.,
Minister of Northern Affairs and National Resources,
Ottawa, Ontario.

Dear Sir:—

I beg to submit herewith the report of the Northwest Territories Power Commission for the fiscal year ending March 31st, 1956, as required under Section 24 of the Northwest Territories Power Commission Act, Chapter 196, R.S.C. 1952.

Respectfully submitted,

R. G. ROBERTSON,
Chairman.

NORTHWEST TERRITORIES POWER COMMISSION

1955 - 1956

R. G. ROBERTSON *Chairman*

G. E. LOWE *Member*

T. M. PATTERSON *Member*

E. W. HUMPHRYS *Chief Engineer*

T. A. STOTT *Accountant*

J. I. NICOL *Secretary*

**ANNUAL REPORT
OF THE
NORTHWEST TERRITORIES POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1956
OTTAWA, CANADA**

The Northwest Territories Power Commission was created by an Act of Parliament in 1948 (amended in 1950) and is empowered to construct and operate electric power plants in the Northwest Territories and Yukon Territory. The Act requires that such projects shall be self-sustaining, and consequently the rates charged for power must provide sufficient revenue to cover interest on investment, repayment of principal over a period of years, operating and maintenance expenses and the setting up of a contingency reserve. The Commission is thus a Federal Government Agency concerned with the construction and management of electric power utilities on a commercial basis.

Since its inception the Commission has acquired and continues to operate the following plants:

- (i) Snare River Power Plant — an 8,350 HP hydro-electric development situated some ninety miles northwest of Yellowknife, N.W.T., on the Snare River, with a 115,000 volt transmission line to a terminal station located near Yellowknife. This plant was placed in operation in September 1948 and an interconnection with the Bluefish Hydro-Electric Plant operated by the Consolidated Mining & Smelting Company of Canada was established in 1949. Power is supplied to mines in the Yellowknife area and to a privately owned company for distribution within the municipality of Yellowknife.
- (ii) Fort Smith Plant — a 975 HP diesel electric plant and distribution system placed in service in October 1950, supplying the Fort Smith, N.W.T., settlement on a retail basis.
- (iii) Mayo River Power Plant — a 3,000 HP hydro-electric plant with a 69,000 volt transmission line approximately 32 miles in length and some 5 miles of 6,900 volt line. The generating station is situated on the Mayo River in the Yukon Territory at a point approximately five miles north of the settlement of Mayo Landing and some 265

miles north of the City of Whitehorse. This plant was placed in operation in November 1952 and supplies mining properties on Galena and Keno Hills and two privately owned distribution systems serving the communities of Mayo Landing and Keno City.

Maps showing the locations of the above plants and transmission lines are included in this report.

SNARE RIVER POWER PLANT

Kilowatt hours generated during the year totalled 45,957,400, representing an increase of approximately 20% over the previous year. The sale of primary power increased by over 12% to a total of over 32,006,000 KWHr., and there was an increase of approximately 48% in the sale of secondary power for production of steam. The net result was that total revenue increased over 14% compared with the previous year.

The primary power load has now reached approximately 80% of plant capacity and it was necessary to restrict the supply of secondary power for production of steam during the latter part of the year. There are indications that the primary load will continue to increase to the extent that additional generating capacity and water supply will have to be provided to meet the future demand. It was consequently decided to undertake investigations during the coming summer to determine the cost of developing more power and a consulting engineering firm has been engaged for this purpose.

Extremely high water was experienced during the month of June attributed to abnormally hot weather early in the season, but the water supply for the year was not above average. The higher load level resulted in reduced head in the latter part of the year and while the capacity of the plant was consequently below maximum it was adequate to supply the primary load at all times.

No operating difficulties were encountered during the year. The only major interruption in the supply of power, apart from the two prearranged shutdowns mentioned below, occurred on June 30 when it was necessary to de-energize the transmission line between the plant and Yellowknife for approximately nine hours to protect personnel fighting a forest fire that was dangerously close to a transmission line structure.

A prearranged shutdown of approximately thirteen and one half hours for the annual inspection of the turbine and generator took place on July 1st. On August 14th there was a further prearranged shutdown of some 5 hours duration to permit installation of spare voltage regulating equipment.

Lightning caused four short outages on the main transmission line and various fault and atmospheric conditions on associ-

ated lines caused a number of brief interruptions of the inter-connection with the Consolidated Mining & Smelting Company's Bluefish Lake Hydro plant.

The staff living quarters were redecorated and minor work carried out to maintain these structures in first class condition.

FORT SMITH PLANT

The number of customers supplied by the Fort Smith diesel plant increased slightly and there was a substantial increase in average and peak loads; kilowatt hours generated totalled 1,013,350 representing an increase of 22% over the previous year, and gross revenue increased by approximately 14.5%. Due to lower cost fuel, operating costs remained practically unchanged from the preceding year.

A fourth generating unit comprising a 405 HP, 6 cylinder supercharged diesel engine driving a 280 KW generator was installed during the year and placed in service in December. An extension of the powerhouse building was constructed to accommodate the new equipment and to provide additional office accommodation, and a fourth generator control panel was added to the switchgear. These additions represent an investment of approximately \$40,500 and have increased the installed capacity of the plant to 650 KW.

A 100,000 gallon outdoor storage tank was installed at a cost of approximately \$9,500 which made it possible to use a lower cost fuel obtained from Norman Wells, N.W.T. This fuel has proved to be very satisfactory and will result in substantial savings in production costs in addition to improved engine performance.

A number of other plant improvements were made to improve the efficiency and operation of the plant, which included three phase station service power supply, an electrically driven air compressor, lubricating oil filters, lubricating oil storage tanks and improvements to the cooling water system.

A number of minor extensions of the distribution system were constructed to serve new customers and maintenance work was performed as necessary to maintain the system in first class condition.

The entire work programme as outlined above was carried out by the regular plant staff, augmented by day labour recruited locally as required, under the supervision of the plant superintendent.

The 3/4 ton service truck was replaced with a pickup type truck of similar capacity but equipped with four wheel drive and a winch.

The only complete interruptions to service were three pre-arranged shutdowns totalling five and one half hours to permit installation of the new generating equipment.

MAYO RIVER HYDRO-ELECTRIC POWER PLANT

Power generated during the year totalled 14,005,000 KWHrs, which was approximately 8% less than for the preceding year. This decline was due to the Mackeno Mining Company's mill being closed down most of the year and a decrease of over 10% in consumption by the United Keno Hill Mines Ltd. Consumption by other consumers actually increased slightly as compared with the preceding year and peak loads during the winter months were close to plant capacity. No power is supplied by this plant for heating purposes.

During the year arrangements were made for the supply of power to the Mackeno Mining Company's mine property, which is separate and apart from the mill property that has been supplied since 1953. Actual supply was scheduled to commence in April 1956, upon completion of a substation being erected by the mining company at a point where the Commission's transmission line passes close to the mine premises. Power will be supplied at transmission line voltage with metering equipment provided by the Commission.

Consideration was given to the installation of a second generating unit to supply additional power to the United Keno Hill Mining Company but no decision had been made by the close of the fiscal year.

The erosion of rock below the spillway and slight displacement of the lower end of the spillway chute mentioned in last year's report did not increase appreciably but these conditions are being kept under observation.

A heavy duty, four wheel drive, dump truck equipped with a winch and snowplow, was purchased to facilitate transmission line and access road maintenance. The four wheel drive station wagon, used chiefly for personnel transport, was replaced with a new vehicle of similar nature.

Major interruptions to power supply were confined to the annual shutdown for inspection of the turbine, involving a pre-arranged outage of six and one half hours, and a four hour interruption due to failure of a bearing thermometer which gave a false high temperature indication.

Maintenance work involved the surge tank heaters and minor generating plant equipment. Considerable trouble was experienced with the domestic water supply and the staff quarters sewage disposal system during mid-winter. These difficulties will require more permanent remedial work as soon as this can conveniently be done.

FORT SIMPSON PLANT

Following a request originated by the Department of Northern Affairs and National Resources, the Commission investigated the establishment of a central generating plant and distribution system to supply the increasing requirements of the settlement of Fort Simpson, N.W.T. It was concluded that such a plant could be established and operated within the terms of the Northwest Territories Power Commission Act, and Governor General-in-Council approval was obtained for the construction of a 225 KW diesel generating station and associated distribution system at an estimated cost of \$150,000. By the close of the year orders had been placed for major equipment and design work and construction plans put in hand. This project will be carried out by the Commission's own forces augmented by day labour as required for construction. It is anticipated that the plant will be in service by the fall of 1956 with supervisory staff resident at Fort Smith to be in charge of its operation.

NEW AKLAVIK

In accordance with the recommendation of the Advisory Committee on Northern Development, the Commission agreed to undertake the establishment and operation of a central heating and power plant and water and sewerage system in the new townsite of Aklavik, subject to Parliamentary approval of the necessary amendments to the Northwest Territories Power Commission Act to permit the Commission to engage in the supply of utility services in addition to power, and approval of the project by the Governor General-in-Council as required by the Act. The Commission accordingly maintained an active liaison with the various government departments and committees engaged in the preliminary planning of the new townsite so that detail planning can be proceeded with as soon as the requirements have been firmly established and the necessary authorizations obtained.

WHITEHORSE

On the instructions of the Minister of Northern Affairs and National Resources the Commission commenced investigations towards the establishment of a central generating plant in the Whitehorse area to supply the entire power requirements of all Department of National Defence establishments in the area, and to augment the supply for the municipality of Whitehorse. Both steam and hydro developments were studied but following preliminary investigations it was concluded that a hydro development would be practicable and could supply power at lower cost than could be expected of a steam plant and at much lower cost than present diesel production. The Commission's proposals were sub-

mitted to the Government and the undertaking of a suitable hydro development was approved in principle. Consulting engineers have been engaged to investigate and determine the most appropriate site and it is expected that these investigations will be completed in time to permit construction to commence in the fall of 1956.

The intent is that the Commission development will supply power on a wholesale basis to the Department of National Defence establishments, and to the privately owned utility company presently distributing power within the municipality.

LEGISLATION

As mentioned in the reference to the proposed Aklavik project it was found advisable to seek amendment of the Northwest Territories Power Commission Act to extend the Commission's functions. It was decided to propose, concurrent with the major amendment already mentioned, several additional amendments, which the Commission believes to be desirable.

The proposed amendments were drafted in consultation with the Department of Justice and a Bill seeking approval of same was placed before Parliament, but final action upon it had not been taken by the close of the year.

FINANCIAL

Funds are advanced by the Minister of Finance for the construction of individual plants, and each plant is operated on a self-sustaining basis. Funds advanced for capital purposes are repaid by amortization, and profit and loss are not regarded as transferable between plants. The rates charged for power sold are established in accordance of Section 11 of the Act. Charges shown as depreciation for the current year represent repayments of capital at the end of the fiscal year.

The fiscal year has been established as the twelve month period ending on the 31st of March.

SNARE RIVER POWER PLANT

The Capital Loan for this plant is repayable over the 20 year period ending March 31st, 1969. The interest rate is 3 1/8% per annum.

The seventh annual debt retirement instalment amounting to \$325,513.13, was paid to the Minister of Finance as of March 31st, 1956. Of this sum \$211,579.24 was principal and \$113,933.89

interest. Revenue from sale of power and miscellaneous income increased by over 14% as compared with the previous year and exceeded costs by \$129,208.08; of this amount \$129,000.00 has been assigned to the contingency reserve for this plant which stands at \$134,000.00 as at March 31st, 1956. A loan, with interest at the rate of 3 1/8% per annum, was made to the Fort Smith Plant from surplus Capital funds which were not immediately required for purposes of the Snare River Plant.

FORT SMITH POWER PLANT

The Capital Loan for this plant is repayable over the 20 year period ending March 31st, 1971. The interest rate is 3 1/8% per annum on all but \$3,000 of the capital loan on which the rate of 3 3/4% applies.

The fifth annual debt retirement instalment amounting to \$9,867.87 was paid to the Minister of Finance as of March 31st, 1956. Of this sum \$6,017.53 was principal and \$3,850.34 interest. Total revenue increased by over 14% as compared to the previous year and exceeded costs by \$16,757.56 which has been carried forward as surplus. The contingency reserve account was adjusted to \$30,000 by the transfer of \$44,500 to surplus account. The 1955 expansion programme was financed by a temporary loan from the Snare River Capital Account and final arrangements for this financing have been deferred pending Parliamentary consideration of the proposed amendments to the Northwest Territories Power Commission Act.

MAYO RIVER POWER PLANT

The Capital Loan for this plant is repayable over the 20 year period ending March 31st, 1973. The interest rate is 3 1/8% per annum.

The third annual debt retirement instalment amounting to \$292,800.89 was paid to the Minister of Finance as of March 31st, 1956. Of this sum \$168,275.57 was principal and \$124,525.32 interest.

Owing to the decrease in power consumption as explained in a preceding paragraph net revenue declined to \$14,105.52; of this amount \$14,000.00 has been assigned to contingency reserve, increasing this account to \$234,500.00 as of March 31st, 1956.

GENERAL

Included in this report is the Consolidated Balance Sheet of the Commission as at March 31st, 1956, certified by the Auditor General of Canada, which reflects the financial standing of the Snare River, Fort Smith and Mayo River Plants.

Also included are the Commission's Supplementary Detail Statements as follows:

- (i) Assets and Liabilities, by Plants, as at March 31, 1956.
- (ii) Income and Expense, by Plants, for the year ended March 31, 1956.
- (iii) Surplus, by Plants, for the year ended March 31, 1956.

The Comptroller of the Treasury, Department of Finance, supplied all accounting and financial services to the Commission.

Ottawa, June 27, 1956

The Honourable Jean Lesage,

Minister of Northern Affairs and National Resources,

Ottawa.

Sir,

The accounts and financial statements of Northwest Territories Power Commission have been examined for the year ended March 31, 1956, and a set of the financial statements is attached.

Section 16 of the Northwest Territories Power Commission Act provides that moneys advanced to the Commission for capital expenditures shall be deposited to the credit of a "Capital Account". Parliamentary appropriations out of which the advances were made to the Commission, from time to time, having specified the particular plants for which the advances were to be made, the Commission has followed the practice of maintaining a separate capital account with respect to each of the three plants under its administration. During 1955-56 the Commission decided to expand one of the plants, to the extent of approximately \$54,000 beyond the \$141,000 which had been advanced for that plant out of Parliamentary appropriations, and it financed the expansion out of a balance in the capital account maintained for another plant. This balance had arisen from sales of construction equipment and materials, and represented recovery of expenditures previously made out of Parliament appropriations for that other plant.

In compliance with the requirements of section 87 of the Financial Administration Act I report that, in my opinion, subject to the foregoing:

- (a) proper books of account have been kept by the Commission;
- (b) the financial statements of the Commission
 - (i) were prepared on a basis consistent with that of the preceding year and are in agreement with the books of account,
 - (ii) in the case of the balance sheet, give a true and fair view of the state of the Commission's affairs as at the end of the financial year, and
 - (iii) in the case of the statement of income and expense, give a true and fair view of the income and expense of the Commission for the financial year; and
- (c) the transactions of the Commission that have come under my notice have been within the powers of the Commission under the Financial Administration Act and any other Act applicable to the Commission.

Yours faithfully,

(Sgd.) WATSON SELLAR,
Auditor General.

NORTHWEST TERRITORY
(Established by the Northwest Territories Act)

BALANCE SHEET
(with comparative figures)

	ASSETS	March 31, 1956	March 31, 1955
Cash:			
Capital Account	\$ 111,386		\$ 178,918
Special Account	229,739		94,977
		\$ 341,125	
Accounts Receivable		182,297	169,528
Prepaid Expenses:			
Inventories of maintenance and operating supplies and spare parts, at cost	65,159		23,061
Other prepaid expenses	3,178		2,027
		68,337	
Bonds held as Consumers' Security Deposits (contra)		75,000	75,000
Investment in Government of Canada Bonds, at cost (market value: 1956 - \$249,050; 1955 - \$252,215), held for Contingency Reserve Fund (contra) ..		250,710	251,222
Capital Assets, at cost:			
Power plants	5,987,003		5,959,464
Transmission and distribution facilities	1,962,599		1,961,041
Staff dwellings, warehouses and miscellaneous buildings	503,543		502,636
Communication, transportation and other equipment	453,815		440,539
	8,906,960		8,863,680
Less: Accumulated provision for depreciation (equivalent to cumulative total of annual repayments of principal of advances from the Government of Canada)	1,698,013		1,312,141
		7,208,947	7,551,539
		8,126,416	8,346,272

Certified correct:
(Sgd.) T. A. Stott,
Accountant

Approved:
(Sgd.) R. G. Robertson,
Chairman

POWER COMMISSION
 (Northern Territories Power Commission Act)

at MARCH 31, 1956
 (as at March 31, 1955)

	LIABILITIES	March 31, 1956	March 31, 1955
Accounts Payable		\$ 11,382	\$ 11,923
Instalment due in Repayment of Advances from the Government of Canada		211,579	205,168
Consumers' Security Deposits		75,645	75,570
Contingency Reserve Fund		398,500	300,000

Capital

Advances from the Government of Canada under section 15 of the Act	\$7,579,038	7,958,499
Less: Instalment due as at March 31, 1956, as above	211,579	205,168
	7,367,459	7,753,331
Surplus, per Statement of Surplus	61,851	280

<u>8,126,416</u>	<u>8,346,272</u>
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Certified in accordance with my report dated June 27, 1956 to the Minister of Northern Affairs and National Resources, under section 87 of the Financial Administration Act.

(Sgd.) Watson Sellar,
Auditor General of Canada

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Income and Expense for the year ended March 31, 1956

(with comparative figures for the year ended March 31, 1955)

	Year ended March 31	
	1956	1955
Income		
Sales of power, less "prompt payment" discounts—		
Mining	\$ 811,378	\$ 788,929
Commercial	129,339	112,953
Domestic	25,362	16,922
	<hr/> 966,079	<hr/> 918,804
Miscellaneous Income	14,305	12,778
	<hr/> \$ 980,384	<hr/> 931,582
Expense		
Operating Expenses—		
Salaries and wages	91,776	91,159
Diesel oil	18,748	19,837
Charter of aircraft	9,131	10,777
Travel and removal expenses	5,674	4,652
Staff-house food costs (net)	4,955	4,468
Miscellaneous	10,201	10,161
	<hr/> 140,485	
Maintenance	15,011	18,313
Administrative Expenses—		
Salaries	24,590	22,356
Miscellaneous	12,045	11,546
	<hr/> 36,635	
Interest on advances from the Government of Canada	242,310	254,003
Provision for depreciation (equivalent to annual repayment of principal of advances from the Government of Canada)	385,872	374,178
	<hr/> 820,313	<hr/> 821,450
Net Income, carried to Suplus Account	<hr/> 160,071	<hr/> 110,132

NOTE: The above administrative expenses do not include charges with respect to:
(a) accounting services provided by the Office of the Comptroller of the Treasury,
and (b) head office premises provided by the Department of Public Works.

NORTHWEST TERRITORIES POWER COMMISSION

Statement of Surplus

for the year ended March 31, 1956

Balance at beginning of year	\$	280	
<i>Add:</i> Net income for the year, per Statement of Income and Expense		160,071	
			<u>\$ 160,351</u>
<i>Deduct:</i> Addition to Contingency Reserve Fund			98,500
Balance at end of year			<u><u>61,851</u></u>

NORTHWEST TERRITORIES POWER COMMISSION

Supplementary Detail Statement

Assets and Liabilities, by Plants, as at March 31, 1956

Assets	SNARE RIVER PLANT	FORT SMITH PLANT	MAYO RIVER PLANT	TOTAL
Cash—				
Capital Account	\$ 24,085	\$ 60	\$ 87,241	\$ 111,386
Special Account	218,555	10,431	753	229,739
Accounts Receivable	123,666	13,338	45,293	182,297
Inter-plant loan of capital funds	54,000	54,000		
Prepaid Expenses:				
Inventories of maintenance and operating supplies and spare parts, at cost	29,421	18,412	17,326	65,159
Other prepaid expenses	807	1,474	897	3,178
Bonds held as Consumers' Security Deposits (contra)	50,000		25,000	75,000
Investments in Government of Canada Bonds, at cost (market value \$249,050) held for Contingency Reserve Fund (contra)	3,382	49,806	197,522	250,710
Capital Assets, at cost:				
Power plants	2,477,241	143,789	3,365,973	5,987,003
Transmission and distribution facilities	1,418,490	44,118	499,991	1,962,599
Staff dwellings, warehouses and miscellaneous buildings	311,280	3,504	188,759	503,543
Communication, transportation and other equipment	304,020	6,223	143,572	453,815
Less: Accumulated provision for de- preciation (equivalent to cumulative total of annual repayments of principal on advances from the Government of Canada)	1,180,695	27,635	489,683	1,698,013
Total Assets	3,834,252	209,520	4,082,644	8,126,416

Liabilities

Accounts Payable	\$ 4,019	\$ 883	\$ 6,480	\$ 11,382
Instalment due in Repayment of Ad- vances from the Government of Canada	211,579			211,579
Consumers' Security Deposits	50,000	645	25,000	75,645
Contingency Reserve Fund	134,000	30,000	234,500	398,500
Capital:				
Advances from the Government of Canada under section 15 of the Act	3,645,884	116,619	3,816,535	7,579,038
Less: Instalment due as at March 31, 1956, as above	211,579			211,579
Surplus, per Statement of Surplus ..	349	61,373	129	61,851
Total Liabilities	3,834,252	209,520	4,082,644	8,126,416

NORTHWEST TERRITORIES POWER COMMISSION

Supplementary Detail Statement

Statement of Income and Expense, by Plants, for the year ended March 31, 1956

Income	SNARE RIVER PLANT	FORT SMITH PLANT	MAYO RIVER PLANT	TOTAL
Sales of power, less "prompt payment" discounts—				
Mining	\$ 483,101	\$	\$ 328,277	\$ 811,378
Commercial	64,485	49,045	15,809	129,339
Domestic		25,362		25,362
Miscellaneous—				
Rents	1,978		1,019	2,997
Interest	3,245	1,326	5,782	10,353
Sundries	1	157	797	955
Total Income	552,810	75,890	351,684	980,384
Expense				
Operating—				
Salaries and wages	51,141	18,572	22,063	91,776
Diesel oil		18,748		18,748
Charter of aircraft	9,131			9,131
Travel and removal expense	2,566	462	2,646	5,674
Staff house food costs (net)	4,955			4,955
Trucks, tractors, etc.	1,431	639	816	2,886
Power line rentals	2,400			2,400
Miscellaneous	2,669	1,259	987	4,915
Maintenance—				
Structures and improvements	1,862	430	1,521	3,813
Equipment	4,318	2,017	4,479	10,814
Miscellaneous	94	199	91	384
Administrative—				
Salaries and wages	11,552	4,260	8,778	24,590
Employer's contributions to employees' welfare schemes	3,559	1,412	1,768	6,739
Insurance	499	634	683	1,816
Travel	1,075	99	410	1,584
Telephone and telegraph	287	207	318	812
Miscellaneous	550	326	218	1,094
Interest on advances from the Government of Canada	113,934	3,851	124,525	242,310
Provision for depreciation (equivalent to annual repayment of principal of advances from the Government of Canada)	211,579	6,018	168,275	385,872
Total Expense	423,602	59,133	337,578	820,313
Net Income, carried to Surplus Account	129,208	16,757	14,106	160,071

NORTHWEST TERRITORIES POWER COMMISSION

Supplementary Detail Statement

Surplus, by Plants, for the year ended March 31, 1956

	SNARE RIVER PLANT	FORT SMITH PLANT	MAYO RIVER PLANT	TOTAL
Balance as at April 1, 1955 .. \$	141 \$	116 \$	23 \$	280
<i>Add:</i> Net income for the year ended March 31, 1956 ..	129,208	16,757	14,106	160,071
	129,349	16,873	14,129	160,351
<i>Deduct:</i> Addition to Contin- gency Reserve Fund	129,000	44,500	14,000	98,500
Balance as at March 31, 1956	349	61,373	129	61,851

NORTHWEST TERRITORIES POWER COMMISSION

Scale of Miles
0 5 10 20

NWTPC
SNARE RIVER
POWER PLANT
8350 HP

LEGEND
Transmission Lines NWTPC
C.M. & S. Co.
C.D.M. Ltd.

C.M. & S. CO.
BLUEFISH
POWER PLANT
4700 HP

NWTPC
YELLOWKNIFE
TERMINAL

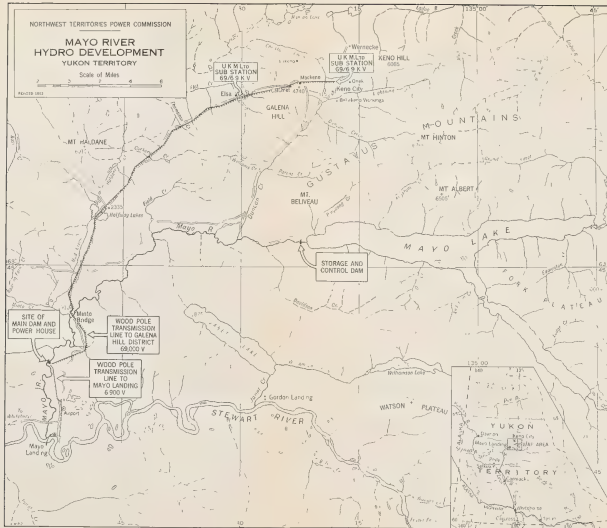
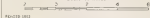


Box Canyon
Yellowknife

NORTHWEST TERRITORIES POWER COMMISSION

MAYO RIVER HYDRO DEVELOPMENT YUKON TERRITORY

Scale of Miles



CAI
NΦ
- A 56

Government
Publications

GOVERNMENT OF CANADA

Northern Canada Power Commission

ANNUAL REPORT
OF THE
NORTHERN CANADA POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1957



OTTAWA, CANADA

GOVERNMENT OF CANADA

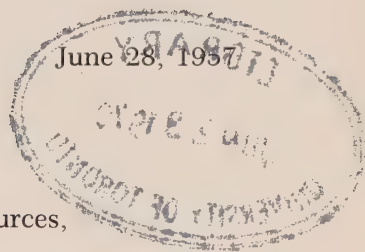
**Northern Canada
Power Commission**

**ANNUAL REPORT
OF THE
NORTHERN CANADA POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1957**

OTTAWA, CANADA



Northern Canada Power Commission



The Honourable D.S. Harkness, M.P.,
Minister of Northern Affairs and National Resources,
Ottawa, Ontario.

Dear Sir:

I beg to submit herewith the report of the Northern Canada Power Commission for the fiscal year ending March 31, 1957, as required under Section 24 of the Northern Canada Power Commission Act, Chapter 42, 4-5 Eliz. II.

Respectfully submitted,

R. G. ROBERTSON,

Chairman.

NORTHERN CANADA POWER COMMISSION

1956 - 1957

R. G. ROBERTSON *Chairman*

G. E. LOWE *Member*

T. M. PATTERSON *Member*

E. W. HUMPHRYS *General Manager - Chief Engineer*

T. A. STOTT *Secretary-Comptroller*

**ANNUAL REPORT
OF THE
NORTHERN CANADA POWER COMMISSION
FOR THE FISCAL YEAR ENDED
March 31, 1957
OTTAWA, CANADA**

The Northern Canada Power Commission, formerly Northwest Territories Power Commission, was created by an Act of Parliament in 1948. The name of the Commission was changed to Northern Canada Power Commission effective August 14, 1956 by authority of Act of Parliament (4-5 Eliz. II, Chapter 42). The Commission is empowered to construct and operate public utility plants in the Northwest Territories and Yukon Territory and, subject to approval of the Governor General-in-Council, in any other part of Canada. The Act requires that such projects shall be self-sustaining, and consequently the rates charged for utilities supplied must provide sufficient revenue to cover interest on investment, repayment of principal over a period of years, operating and maintenance expenses and the setting up of a contingency reserve. The Commission is thus a Federal Government Agency concerned with the construction and management of public utilities on a commercial basis.

Since its inception the Commission has acquired and operates the following plants:

- (i) Snare River Power Plant — an 8,350 HP hydro-electric development situated some ninety miles northwest of Yellowknife, N.W.T., on the Snare River, with a 115,000 volt transmission line to a terminal station located near Yellowknife. This plant was placed in operation in September 1948 and an interconnection with the Consolidated Mining & Smelting Company Limited's Bluefish Hydro-Electric Plant was established in 1949. Power is supplied to mines in the Yellowknife area and to a privately owned company for retail distribution within the municipality of Yellowknife.
- (ii) Fort Smith Plant — a 975 HP diesel electric plant and distribution system placed in service in October 1950, supplying the Fort Smith, N.W.T., settlement on a retail basis.
- (iii) Mayo River Power Plant — a 3,000 HP hydro-electric plant with a 69,000 volt transmission line approximately

32 miles in length and some 5 miles of 6,900 volt line. The generating station is situated on the Mayo River in the Yukon Territory at a point approximately five miles north of the settlement of Mayo Landing and some 265 miles north of the City of Whitehorse. This plant was placed in operation in November 1952 and supplies mining properties in the Elsa and Keno areas, the community of Mayo Landing, and a privately owned distribution system serving the Keno City community.

- (iv) Fort Simpson Plant — a 375 HP diesel electric plant and distribution system placed in service in October 1956 supplying power on a retail basis in the settlement of Fort Simpson, N.W.T.

SNARE RIVER POWER PLANT

Kilowatt hours generated during the year totalled 41,450,000 which was approximately 10% less than the previous year. However, the sale of primary power increased by approximately 7% as compared with the previous year to a total of 34,450,000 KWHrs., the reduction in total generation being due to a substantial decrease in the amount of secondary power that was available for heating purposes; the resulting total revenue for the current year remained approximately the same as for the previous year.

The primary power load increased to within 90% of plant capacity and it was necessary, during the winter months, to restrict the supply of secondary power for production of steam to off-peak periods. The indications are that there will be a continuing growth in primary power requirements and the Commission is giving active consideration to the provision of additional generating capacity. During the year an engineering investigation was undertaken to determine the cost and most effective method of developing additional hydro power; this investigation showed that a practicable power site exists at a point on the Snare River approximately eight miles downstream from the present plant. It is estimated that this site can be developed at a cost of approximately \$4,800,000 to provide an additional 8,500 HP. At the close of the year the future load requirements were being studied to determine whether or not the Commission would be justified in seeking approval to proceed with this project.

The only operating difficulty during the year was due to failure of a crossarm on a transmission line structure. This, together with a coincident minor fault in the generating plant switchgear resulted in two interruptions to power having a total duration of approximately twenty-six and one-half hours. There was also a prearranged shutdown of twelve hours duration on July 2nd for the annual inspection and maintenance of the turbine and generator. A total of thirteen minor outages aggregating forty

minutes duration were caused by lightning striking the main transmission line and other abnormal conditions beyond human control.

During the year arrangements were made for the supply of power to Rayrock Mines Limited — a new uranium mine situated approximately 22 miles southwest of the Snare River Plant. The mining company constructed a 34,500 volt transmission line between the mining property and the Commission's Snare River generating plant and provided the necessary transformer facilities at both ends of the line. The Commission has provided a substation structure and associated metering and switching equipment to supply this load. Supply of power to this consumer commenced on February 9th by means of temporary substation facilities pending completion of the permanent substation structure.

Staff living quarters and other property were maintained in first class condition, repairs being carried out as necessary.

FORT SMITH PLANT

The number of services supplied by the Fort Smith plant increased during the year from 194 to 287 which resulted in a substantial increase in the peak load and energy consumption. Kilowatt hours generated increased by 27% to a total of 1,288,300; gross revenue increased approximately 31% and operating costs increased approximately 16%.

The increase in power demand is attributable to construction activity in connection with several federal government projects in the settlement and to the opening up of a lumbering industry in the vicinity of Fort Smith. It is anticipated that there will be substantial additional load growth in the settlement over the next two years to the extent that additional generating capacity will be required to ensure continuity of supply. Consequently it was decided to add a 600 KW generating set in 1957 which will increase the total capacity of the plant to 1150 KW. The powerhouse building will be extended to accommodate the new generating unit and to provide garage space for a second service vehicle and additional office accommodation. A substantial extension of the distribution system will be constructed during the coming year to service new consumers.

MAYO RIVER HYDRO ELECTRIC PLANT

Kilowatt hours generated during the year increased approximately 19% to a total of 16,713,000 and gross revenue increased by 25% as compared with the previous year. This increase was due chiefly to the purchase of power by Galkeno Mines Limited for use in their mine and the continuous operation of that company's

mill; the mining load amounting to approximately 300 KW was connected on April 16, 1956. There was also some increase in power consumption by other consumers.

The addition of the Galkeno Mine load resulted in the total load exceeding plant capacity during the months of December to April inclusive. In order to meet this situation arrangements were made with United Keno Hill Mines Limited to operate one of their standby generating units in parallel with the Commission's hydro system for approximately 16 hours per day during this period. The Commission reimbursed United Keno Hill Mines for the full costs of the diesel operation and charged a portion of this expense to the Galkeno Mining Company pursuant to arrangements made with this company when supply of their mine was undertaken.

The only major interruption in the supply of power was a prearranged shutdown of approximately 9 hours duration for inspection and maintenance of the turbine and generator on September 23rd; the only other interruption in supply occurred when a protective relay was accidentally tripped resulting in an 18 minute outage. Routine maintenance work was carried out to maintain the living quarters and other property in first class condition.

The installation of a second 3,000 HP generating unit was approved in July and orders for the turbine and generator were placed immediately thereafter. The decision to proceed with this unit followed the signing of an agreement by United Keno Hill Mines Limited whereby that company contracted to purchase the power that will be made available by the second generating unit at a cost that will meet the additional annual costs that the Commission will incur in connection with this plant expansion. By the close of the year arrangements for construction of the powerhouse extension and installation of equipment were in hand, with a view to having the additional unit in operation by the fall of 1957. It was decided to increase the staff living accommodation at the plant site by erection of a one story duplex residence as part of the No. 2 generating set programme; garage space will be provided in the basement of this structure. It is also intended to carry out repair work below the spillway during the coming year to prevent further erosion of rock in that area and to remove some hill material in order to eliminate lateral pressure against the lower end of the spillway chute.

During the year the Commissioner of the Yukon Territory asked the Commission to consider taking over the retail distribution of power in the settlement of Mayo Landing. The Commission was assured that this request had the support of the residents of the settlement and the Commission subsequently purchased the distribution system in the settlement from the Mayo Light and Power Company, and assumed responsibility for the retail distribu-

tion of power to all residents in the settlement on January 2, 1957. A suitable rate structure has been established which provided a substantial reduction in cost to the majority of consumers in the settlement. It is intended to rebuild the distribution system to ensure satisfactory service conditions and to reduce maintenance requirements but, in the meantime, temporary arrangements have been made to ensure all consumers receive satisfactory service.

FORT SIMPSON PLANT

Construction of the Fort Simpson Diesel Plant and Distribution System commenced in May 1956 and the plant was placed in operation on October 16, 1956.

This plant consists of a frame building, clad in aluminum sheeting and lined with fir plywood treated with fire resistant paint, housing three 75KW generating sets and associated equipment with provision for office space, lockers, etc. A lean-to addition accommodates a service truck.

Auxiliary features include a well with pressure pump to provide water for powerhouse and domestic use and a 1,000 barrel fuel oil storage tank connected to the powerhouse by a heated pipe line. The distribution system consists of approximately 14,000 feet of 4160/2300 volt primary and 230/115 volt lines. The plant and distribution system were constructed entirely by day labour forces working under the supervision of Commission personnel. The total cost of the plant at the end of the fiscal year was \$106,010.

Kilowatt hours generated from the commencement of operation to March 31, 1957 totalled 181,700 with 56 consumers being supplied at the close of the year. Shortly after operation began trouble was experienced with the diesel engine equipment, which has been referred to the manufacturer and was still under investigation at the close of the year.

This plant is operated under the supervision of supervisory staff resident at Fort Smith. A voice radio link has been established between Fort Smith and Fort Simpson to facilitate communication between the two plants.

WHITEHORSE RAPIDS POWER DEVELOPMENT

In the preceeding annual report reference was made to investigations that were in hand to select a suitable site for the construction of a hydro station to supply the Whitehorse area. In April 1956 an investigation was commenced in the Whitehorse Rapids area on the Yukon River some 2 miles upstream (south) of the City of Whitehorse. This investigation showed this to be a satisfactory site, though the nature of the river and the large amount of water to be taken care of make it an expensive site for

the amount of power required. However, the proximity of the site to the load centre, with consequent absence of a lengthy transmission line and reduction in other operational costs, made this site competitive with the more remote sites that had been under consideration. Furthermore, since a much larger amount of power is available at this site and it was found to be economically sound to provide sufficient capacity to permit the continuous supply of power to the new Whitehorse hospital for heating purposes at a rate that will effect an appreciable reduction in heating costs as compared with oil fuel; this additional load justifies the initial installation of two generating units which, from the operating point of view, is of considerable advantage.

Upon completion of the Whitehorse Rapids site investigation it was proposed to construct a generating plant at that site having an initial capacity of 15,000 HP in two generating units, with provision for the future installation of a third 7,500 HP unit, at an estimated cost of \$7,000,000. This project was approved by the Governor-in-Council in August 1956.

Tenders for the construction contract were called in September and the contract was awarded to the Poole Construction Company of Calgary, Alberta. Construction commenced in November, and at the close of the year the programme was on schedule; orders for all major equipment have been placed and delivery promises are satisfactory. The plant is scheduled to be completed by the Fall of 1958. It is intended that power will be supplied on a wholesale basis to the Department of National Defence and for heating purposes only to the Department of National Health and Welfare hospital, and will be supplied in bulk to the privately owned utility company for retail distribution to other consumers within that company's franchise area.

NEW AKLAVIK UTILITY PROJECT

The preceeding annual report referred to the proposal that the Commission assume responsibility for all utilities including central heating, at the New Aklavik townsite. During the year Consulting Engineers were engaged by the Commission to study the requirements and to design the necessary facilities. When the requirements for the various public buildings, etc., became available it was determined that a central heating system would be a feasible scheme and would result in substantial annual savings to the Federal government in respect to operating costs. By the close of the year the initial design of the power plant, heating system and utility lines was well advanced and procurement action for critical equipment and materials was in hand. The schedule calls for the plant to be in operation by the Fall of 1958 with the distribution systems to be completed in 1959 concurrent with construction of the premises that are to be supplied.

The plant will consist of a central building housing three oil fired boilers, a back pressure turbine driving an electric generator and three diesel generating sets. Heat will be distributed by a high pressure hot water system and the pipe lines carrying the heating water, domestic water and sewer lines will be run in insulated pipe boxes which are being called "utilidors". The utilidors will be connected to the consumer's premises through similar insulated boxes but of smaller cross sectional dimensions called "utilidettes". Due to permafrost conditions all structures including the fuel tanks and powerhouse must be erected on piles which will be driven to sufficient depth to ensure that they become permanently frozen in the permafrost; an air space between the structure and the ground line will prevent the transfer of heat to the pile footings which would result in unstable foundation conditions. A conventional overhead distribution system will carry electric power to all consumers in the townsite and will be extended to supply the airport and the Department of National Defence communication stations outside the settlement area.

MOOSE FACTORY

During the year a request was received from the Department of National Health and Welfare that the Commission consider taking over responsibility for the operation of the central heating and power plant supplying that department's hospital at Moose Factory near Moosonee, Ontario, and it was suggested that the existing electrical distribution system should be extended to supply private residences on Moose Factory Island. Following investigation the Commission agreed to take over the operation of the plant and distribution systems subject to the necessary approval of the Governor-in-Council as required under Section 6 of the Act as amended 1956. By the close of the year further discussions had been held with the Department of National Health and Welfare officials with a view to that Department seeking the necessary approval for transfer of the facilities involved to the Commission.

LEGISLATION

The preceeding annual report referred to the necessity of seeking an amendment to the Act to extend the Commission's functions to permit construction of the proposed central heating, water and sewer systems, for the New Aklavik townsite. A number of additional amendments to the Act were also submitted at the same time for approval by Parliament. An Act to amend the Northwest Territories Power Commission Act, Chapter 42, 4-5 Eliz. II, was assented to on August 14, 1956, and contains the following major provisions:

- (a) The name of the Commission changed from "Northwest Territories Power Commission" to "Northern Canada Power Commission".

- (b) The Commission is empowered to supply public utilities (as defined in the Act, viz., electric energy, thermal energy, water sewerage service, telephone service), and to construct and operate plants for the supply of such utilities.
- (c) Subject to the approval of the Governor-in-Council and the laws of the province concerned, the Commission is empowered to operate in any province of Canada (in addition to the Northwest Territories and Yukon Territory).
- (d) The Commission is empowered to initiate the investigation of projects and provision is made for a fund to finance such investigations.
- (e) The Commission is empowered to use surplus funds accumulated from its operations for the expansion or improvement of the plants in respect to which such funds accrued.

FINANCIAL

Funds are advanced by the Minister of Finance for the construction of individual plants, and each plant is operated on a self-sustaining basis. Funds advanced for capital purposes are repaid by amortization, and profit and loss are not regarded as transferable between plants. The rates charged for power sold are established in accordance of Section 10 of the Act. Charges shown as depreciation for the current year represent repayments of capital at the end of the fiscal year.

The fiscal year has been established as the twelve month period ending on the 31st of March.

SNARE RIVER POWER PLANT

The Capital Loan for this plant is repayable over the 20 year period ending March 31, 1969. The interest rate is $3\frac{1}{8}\%$ per annum.

The eighth annual debt retirement instalment amounting to \$325,513.13, was paid to the Minister of Finance as of March 31, 1957. Of this sum \$218,191.10 was principal and \$107,322.03 interest. Revenue from the sale of power and miscellaneous income increased by approximately 1% as compared with the previous year and exceeded costs by \$138,424.73 of which \$100,000 has been assigned to the contingency reserve for this plant which stands at \$234,000 as at March 31, 1957.

FORT SMITH POWER PLANT

The Capital Loan for this plant is repayable over the 20 year period ending March 31, 1971. The interest rate is $3\frac{1}{8}\%$ per annum on all but \$3,000 of the capital loan on which a rate of $3\frac{3}{4}\%$ applies.

The fifth annual debt retirement instalment amounting to \$9,867.87 was paid to the Minister of Finance as of March 31, 1957. Of this sum \$6,206.41 was principal and \$3,661.46 interest. Total revenue increased by 27% as compared to the previous year and exceeded costs by \$26,819.02 which has been carried forward as surplus. The contingency reserve account for this plant stands at \$30,000. Pursuant to the amendment to Section 22 of the Act the 1955-56 expansion programme of this plant which involved a capital investment of \$59,599.14 has been charged to accumulated surplus as indicated in the balance sheet. A surplus of \$28,593.04 has been carried forward at the close of the current fiscal year.

MAYO RIVER POWER PLANT

The Capital Loan for this plant is repayable over the 20 year period ending March 31, 1973. The interest rate is 3½% per annum.

The third annual debt retirement instalment amounting to \$292,800.89 was paid to the Minister of Finance as of March 31, 1957. Of this sum \$173,534.18 was principal and \$119,266.71 interest.

Revenue increased by approximately 19% as compared with the preceding year resulting in a surplus for the year of \$80,504.06 of which \$65,500 has been assigned to the contingency reserve fund, which stands at \$300,000 as of March 31, 1957.

FORT SIMPSON POWER PLANT

Governor-in-Council approval was given in May 1956 to an interest rate of 3½% per annum on advances to be repaid over a period of 20 years in connection with capital expenditures for construction of this plant. The plant was completed in October 1956 and net earnings on sales of power to March 31, 1957 were \$4,253.07. The first annual debt retirement instalment totalling \$7,836.07 falls due March 31, 1958 on advances of \$110,120.17 in accordance with the provisions of section 16 of the Act.

WHITEHORSE RAPIDS POWER DEVELOPMENT

Governor-in-Council approval was given in October 1956 to an interest rate of 4% per annum on advances to be repaid over a period of 40 years in connection with capital expenditures for construction of the plant. Construction commenced in November 1956 and advances of \$550,540.28 were drawn to March 31, 1957. Retirement of the debt will commence following completion of the plant in accordance with the provisions of Section 16 of the Act.

NEW AKLAVIK UTILITY PROJECT

The costs of preliminary engineering in connection with this project were provided from the \$50,000 fund established in September 1956 under authority of section 14 of the Act. Disbursements totalling \$25,741.58 were made in connection with this project to March 31, 1957.

GENERAL

Included in this report is the Consolidated Balance Sheet of the Commission as at March 31, 1957, certified by the Auditor General of Canada, which reflects the financial standing of the Snare River, Fort Smith, Mayo River and Fort Simpson plants, and of the Whitehorse and Aklavik Projects.

Also included are the Commission's Supplementary Detail Statements as follows:

- (i) Assets and Liabilities, by Plants, as at March 31, 1957.
- (ii) Income and Expense, by Plants, for the year ended March 31, 1957.
- (iii) Surplus, by Plants, for the year ended March 31, 1957.

The Comptroller of the Treasury, Department of Finance supplied accounting and financial services to the Commission for the first two months of the fiscal year and the Commission assumed full responsibility for these services as of June 1, 1956.

Ottawa, June 27, 1957

The Honourable D. S. Harkness,
Minister of Northern Affairs and National Resources,
Ottawa.

Sir,

The accounts and financial statements of Northern Canada Power Commission (formerly Northwest Territories Power Commission) have been examined for the year ended March 31, 1957. In compliance with the requirements of section 87 of the Financial Administration Act I report that, in my opinion:

- (a) proper books of account have been kept by the Commission;
- (b) the financial statements of the Commission
 - (i) were prepared on a basis consistent with that of the preceding year and are in agreement with the books of account,
 - (ii) in the case of the balance sheet, give a true and fair view of the state of the Commission's affairs as at the end of the financial year, and
 - (iii) in the case of the statement of income and expense, give a true and fair view of the income and expense of the Commission for the financial year; and
- (c) the transactions of the Commission that have come under my notice have been within the powers of the Commission under the Financial Administration Act and any other Act applicable to the Commission.

Yours faithfully,

(Sgd.) WATSON SELLAR,
Auditor General.

NORTHERN CANADA
(Established by the Northern Development Act)
BALANCE SHEET
(with comparative figures)

	ASSETS	1957	1956
Cash:			
Capital Account	\$ 152,265		\$ 111,386
Special Account	247,272		229,739
		\$ 399,537	
Accounts Receivable		188,924	182,297
Prepaid Expenses:			
Inventories of maintenance and operating supplies and spare parts, at cost	70,444		65,159
Other prepaid expenses	2,087		3,178
		72,531	
Bonds held as Security Deposits (contra) ..		175,000	75,000
Investment in Government of Canada Bonds, at cost (market value, \$370,125)		377,561	250,710
Deferred Engineering Expenses		38,628	—
Capital Assets, at cost:			
Power plants	6,099,158		6,001,683
Transmission and distribution facilities	2,002,279		1,962,599
Staff dwellings, warehouses and miscellaneous buildings	503,591		503,543
Communication, transportation and other equipment	421,398		439,135
Projects under construction	735,509		—
Preliminary engineering expenses	53,430		—
	9,815,365		8,906,960
<i>Less: Accumulated provisions for depreciation (equivalent to cumulative total of annual repayments of principal of advances from the Government of Canada)</i>	<i>2,095,945</i>		<i>1,698,013</i>
		7,719,420	7,208,947
		8,971,601	8,126,416

Certified correct:

(Sgd.) T. A. Stott,
Secretary-Comptroller

Approved:

(Sgd.) R. G. Robertson,
Chairman

POWER COMMISSION

(Canada Power Commission Act)

TO MARCH 31, 1957

(as at March 31, 1956)

	LIABILITIES	1957	1956
Accounts Payable		\$ 186,270	\$ 11,382
Instalment due in Repayment of Advances from the Government of Canada		218,191	211,579
Security Deposits:			
Consumers	\$ 76,600		75,645
Construction contractor	100,000		
		176,600	—
Reserve for Contingencies		564,000	398,500
Reserve for Extension, Expansion and Im- provements (equivalent to expenditures incurred on acquisition of capital assets, as permitted under section 22 of the Act)		59,599	—
Capital:			
Advances from the Government of Canada (less instalment due as at March 31, 1957, as above):			
Under section 14 of the Act	50,000		
Under section 15 of the Act	7,630,188		7,367,459
	7,680,188		
Surplus, per Statement of Surplus	86,753		61,851
		7,766,941	
		<u>8,971,601</u>	<u>8,126,416</u>

Certified in accordance with my report dated June 27, 1957 to the Minister of Northern Affairs and National Resources, under section 87 of the Financial Administration Act.

(Sgd.) Watson Sellar,
Auditor General of Canada

NORTHERN CANADA POWER COMMISSION

Statement of Income and Expense for the year ended March 31, 1957

(with comparative figures for the year ended March 31, 1956)

Income	1957	1956
Sales of Power, less "prompt payment" discounts:		
Mining	\$ 890,127	\$811,378
Commercial	174,037	129,339
Domestic	35,329	25,362
	<hr/> 1,099,493	<hr/> 966,079
Miscellaneous Income	18,943	14,305
	<hr/> \$1,118,436	<hr/> 980,384
 Expense		
Operating Expenses:		
Salaries and wages	102,317	91,776
Diesel oil	22,576	18,748
Power purchased for resale	18,311	—
Charter of aircraft	9,027	9,131
Travel and removal expenses	4,190	5,674
Staff-house food costs (net)	3,848	4,955
Miscellaneous	12,837	10,201
	<hr/> 173,106	<hr/> 140,485
Maintenance	14,881	15,011
Administrative Expenses:		
Salaries	38,461	24,590
Miscellaneous	13,805	12,045
	<hr/> 52,266	<hr/> 36,635
Interest on advance from the Government of Canada	230,250	242,310
Provision for depreciation (equivalent to annual repayment of principal of advances from the Government of Canada)	<hr/> 397,932	<hr/> 385,872
	<hr/> 868,435	<hr/> 820,313
 Net Income, carried to Surplus Account	 <hr/> <u>250,001</u>	 <hr/> <u>160,071</u>

NOTE: The above administrative expenses do not include charges with respect to head office premises provided by the Department of Public Works.

NORTHERN CANADA POWER COMMISSION

Statement of Surplus for the year ended March 31, 1957

Balance at beginning of year	\$ 61,851	
<i>Add:</i> Net income for the year, per Statement of Income and Expense	250,001	\$311,852
<i>Deduct:</i>		
Transfer to Reserve for Extension, Expansion and Improvements of amounts equivalent to expendi- tures incurred on acquisition of capital assets, as permitted under section 22 of the Act	59,599	
Addition to Reserve for Contingencies	165,500	225,099
Balance at end of year		86,753

NORTHERN CANADA POWER COMMISSION

Assets and Liabilities, by Plants and Projects, as at March 31, 1957

Assets	SNARE RIVER PLANT		FORT SMITH PLANT		MAYO RIVER PLANT		FORT SIMPSON PLANT		WHITE-HORSE RAPIDS PROJECT		NEW AKLAVIK TOWNSITE PROJECT		TOTAL	
Cash:														
Capital Account	\$	74,157	\$	12	\$	28,328	\$	11,376	\$	14,144	\$	24,248	\$	152,265
Special Account		205,063		3,125		44,189		5,105		—		—		247,272
Accounts Receivable		119,981		15,030		46,126		7,787		—		—		188,924
Prepaid Expenses:														
Inventories of maintenance and operating supplies and spare parts, at cost		29,958		16,787		16,611		7,088		—		—		70,444
Other prepaid expenses		371		784		412		520		—		—		2,087
Bonds held as Security Deposits (contra)		50,000		—		25,000		—		100,000		—		175,000
Investment in Government of Canada Bonds, at cost (market value, \$370,125)		126,959		28,424		222,178		—		—		—		377,561
Deferred Engineering Expenses		38,628		—		—		—		—		—		38,628
Capital Assets, at cost:														
Power plants		2,478,471		143,021		3,392,872		84,794		—		—		6,099,158
Transmission and distribution facilities		1,421,568		51,261		515,541		13,909		—		—		2,002,279
Staff dwellings, warehouses and miscellaneous buildings		311,279		3,505		188,807		—		—		—		503,591
Communication, transportation and other equipment		305,471		6,066		102,554		7,307		—		—		421,398
Projects under construction		—		—		89,793		—		645,716		—		735,509

Preliminary engineering expenses	—	—	—	—	53,430	53,430
<i>Less: Accumulated provisions for depreciation (equivalent to cumulative total of annual repayments of principal of advances from the Government of Canada)</i>						
	1,398,886	33,841	663,218	—	—	2,095,945
Total Assets	3,763,020	234,174	4,009,193	127,676	759,860	8,971,601

Liabilities

Accounts Payable	\$ 5,941	\$ 4,694	\$ 25,494	\$ 13,143	\$109,320	\$27,678	\$ 186,270
Instalment due in Repayment of Advances from the Government of Canada	218,191	—	—	—	—	—	218,191
Security Deposits:							
Consumers	50,000	875	25,565	160	—	—	76,500
Construction contractor	—	—	—	—	100,000	—	100,000
Reserve for Contingencies	234,000	30,000	300,000	—	—	—	564,000
Reserve for Extension, Expansion and Improvements (equivalent to expenditures incurred on acquisition of capital assets, as permitted under section 22 of the Act)	—	59,599	—	—	—	—	59,599

Capital:

Advances from the Government of Canada (less instalment due as at March 31, 1957, as above):							
Under section 14 of the Act	—	—	—	—	—	50,000	50,000
Under section 15 of the Act	3,216,114	110,413	3,643,001	110,120	550,540	—	7,630,188
Surplus, per Statement of Surplus	38,774	28,593	15,133	4,253	—	—	86,753
Total Liabilities	3,763,020	234,174	4,009,193	127,676	759,860	77,678	8,971,601

NORTHERN CANADA POWER COMMISSION

Statement of Income and Expense, by Plants, for the year ended March 31, 1957

	SNARE RIVER PLANT	FORT SMITH PLANT	MAYO RIVER PLANT	FORT SIMPSON PLANT	TOTAL
Income					
Sales of power, less "prompt payment" discounts:					
Mining	\$480,793	\$ —	\$409,334	\$ —	\$ 890,127
Commercial	75,990	63,937	20,348	13,762	174,037
Domestic	—	30,594	1,210	3,525	35,329
Miscellaneous:					
Rents	1,995	—	1,080	—	3,075
Interest	4,896	634	9,309	—	14,839
Sundries	—	460	211	358	1,029
Total Income	<u>563,674</u>	<u>95,625</u>	<u>441,492</u>	<u>17,645</u>	<u>1,118,436</u>
Expense					
Operating:					
Salaries and wages	50,178	20,447	25,639	6,053	102,317
Diesel oil	—	19,965	—	2,611	22,576
Power purchased for resale	—	—	18,311	—	18,311
Charter of aircraft	9,027	—	—	—	9,027
Travel and removal expenses	1,870	672	1,387	261	4,190
Staff-house food costs (net)	3,848	—	—	—	3,848
Trucks, tractors, etc.	1,293	665	1,065	162	3,185
Power line rentals	2,400	—	—	—	2,400
Miscellaneous	2,695	2,469	1,390	698	7,252
Maintenance:					
Structures and improvements	660	298	1,942	—	2,900
Equipment	5,651	1,990	3,114	279	11,034
Miscellaneous	462	120	357	8	947
Administrative:					
Salaries and wages	15,673	9,162	11,217	2,409	38,461
Employer's contributions to employees' welfare schemes	3,847	1,535	2,198	404	7,984
Insurance	502	758	669	235	2,164
Travel	938	224	315	43	1,520
Telephone and telegraph	315	193	197	70	775
Miscellaneous	377	440	386	159	1,362
Interest on advances from the Government of Canada	107,322	3,661	119,267	—	230,250
Provision for depreciation (equivalent to annual repayment of principal of advances from the Government of Canada)	218,191	6,207	173,534	—	397,932
Total Expense	<u>425,249</u>	<u>68,806</u>	<u>360,988</u>	<u>13,392</u>	<u>868,435</u>
Net Income, carried to Surplus Account	<u>138,425</u>	<u>26,819</u>	<u>80,504</u>	<u>4,253</u>	<u>250,001</u>

NORTHERN CANADA POWER COMMISSION
Surplus, by Plants, for the year ended March 31, 1957

	SNARE RIVER PLANT	FORT SMITH PLANT	MAYO RIVER PLANT	FORT SIMPSON PLANT	TOTAL
Balance at beginning of year	\$ 349	\$61,373	\$ 129	\$ —	\$ 61,851
Add: Net income for the year ended March 31, 1957	138,425	26,819	80,504	4,253	250,001
	<u>138,774</u>	<u>88,192</u>	<u>80,633</u>	<u>4,253</u>	<u>311,852</u>
<i>Deduct:</i>					
Transfer to Reserve for Extension, Expansion and Improvements of amounts equivalent to expendi- tures incurred on acquisition of capital assets, as permitted under section 22 of the Act	—	59,599	—	—	59,599
Addition to Reserve for Contingen- cies	100,000	—	65,500	—	165,500
	<u>100,000</u>	<u>59,599</u>	<u>65,500</u>	<u>—</u>	<u>225,099</u>
Balance at end of year	<u>38,774</u>	<u>28,593</u>	<u>15,133</u>	<u>4,253</u>	<u>86,753</u>

NORTHWEST TERRITORIES POWER COMMISSION

Scale of Miles



LEGEND

Feetwater in Litres NWTPC 22222222222222

CMANT

(C) MID 45454545454545

NWTPC
SNARE RIVER
POWER PLANT
8350 H.P.

SPILLWAY



CM & S CO
BLUEFISH
POWER PLANT
4700 H.P.



NWTPC
YELLOWKNIFE
TERMINAL

NORTHWEST TERRITORIES POWER COMMISSION

MAYO RIVER HYDRO DEVELOPMENT YUKON TERRITORY

Scale of Miles

0 2 4 6 8 10

